TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

No. 395.

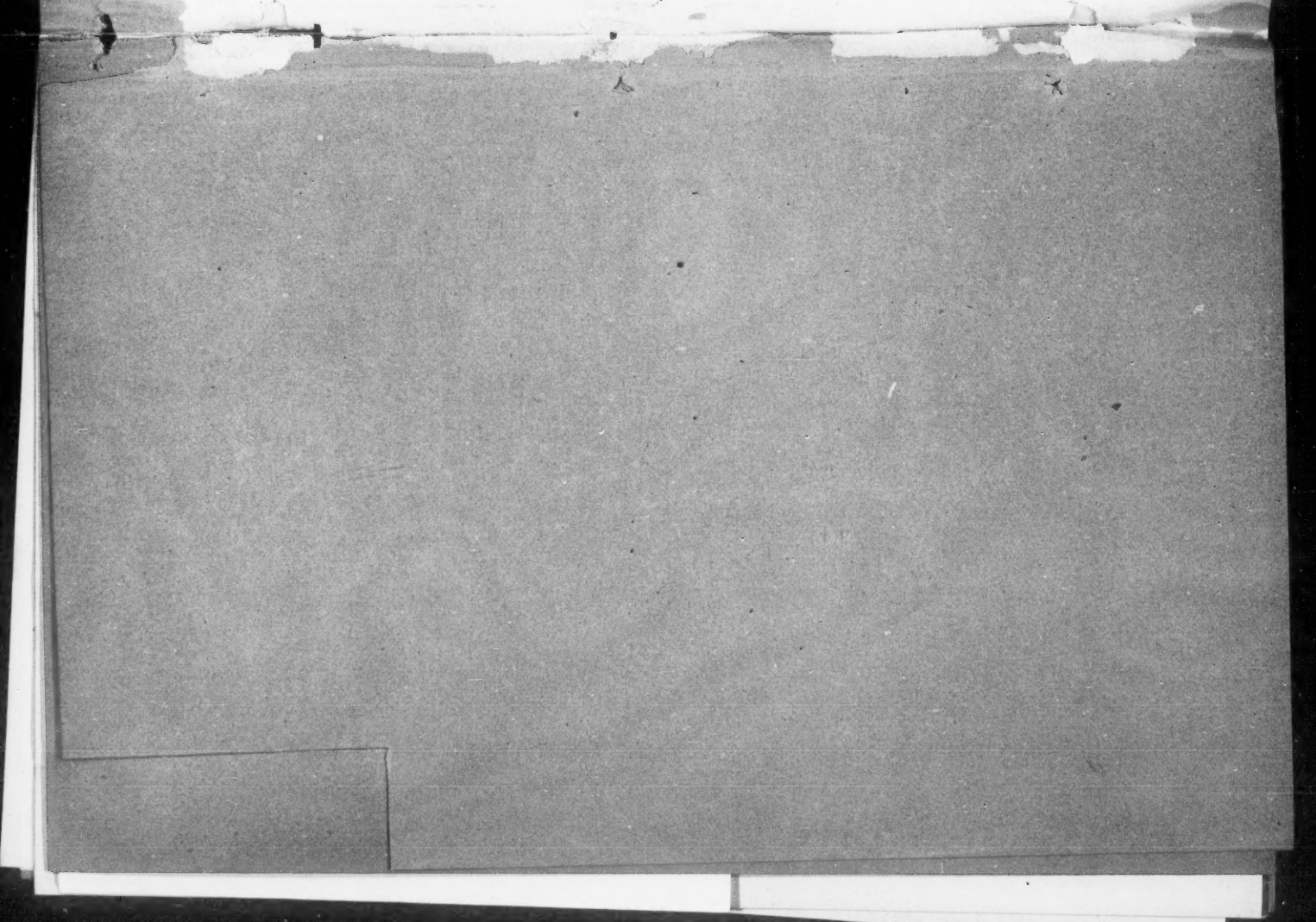
JAMES DENSMORE, AMOS DENSMORE, AND GEORGE W. N. YOST, APPELLANTS,

vs.

WILLIAM C. SCOFIELD, JOHN ALEXANDER, MATTHEW WILSON, ET AL.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF OHIO.

FILED APRIL 11, 1878.



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INDEX.

	Original.	Print.
Bill of complaint	1	1
Subpœna	14	7
Answer	15	7
Replication	26	12
Stipulation as to evidence for complainants	27	13
Stipulation as to evidence for defendants	28	13
Testimony of Jas. Densmore	32	15
D. T. Watson	56	25
Amos Densmore	66	29
Complainants' Exhibit No. 1; stipulation	75	33
Testimony of Addison Hills	77	34
E. S. Flint	78	34
A. M. McGregor	79	35
John Andrews	85	37
Amendments to answer	93	40
Decree	95	41
Certificate of clerk	96	42

1 In the circuit court of the United States for the northern district of Ohio. In equity.

JAMES DENSMORE, AMOS DENSMORE, AND George W. N. Yost
vs.
WILLIAM C. SCOFIELD, JOHN ALEXANDER, Matthew Wilson, Joseph G. Hussey, William D. McBride, Daniel P. Eells, John D. Rockefeller, Samuel Andrews, and Henry M. Flagler.

To the judges of the circuit court of the United States for the northern district of Ohio:

James Densmore, Amos Densmore, and George W. N. Yost, who are citizens of the State of Pennsylvania, bring this their bill of complaint against William C. Scofield, John Alexander, Matthew Wilson, Joseph G. Hussey, William D. McBride, Daniel P. Eells, John D. Rockefeller, Samuel Andrews, and Henry M. Flagler.

And thereupon your orators complain and say that on and prior to the tenth day of April, in the year one thousand eight hundred and sixty-six, the said James Densmond and Amos Densmond were citizens of the United States, and were the original and first inventors of a "new and useful improved oil-tank car for carrying petroleum and other like substances in bulk," which was not known or used by others before their said discovery or invention thereof, and not at the time of their application for letters patent of the United States for said invention or discovery as hereinafter set forth in public use or on sale with
2 their consent or allowance, as the inventors or discoverers thereof, contrary to the provisions of the statutes of the United States in such case made and provided.

That your orators, the said James Densmore and Amos Densmore, be' desirous to obtain an exclusive proper'y in said invention, duly made application in writing to the Commissioner of Patents of the United States, expressing such desire, and praying that letters patent of the United States might be granted to them therefore, and at the time of making such application as aforesaid for said letters patent delivered to the said Commissioner of Patents a written description of the said invention and of the manner and process of making constructing the same, in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which the said invention appertains, or with which it is most nearly connected, to make, construct, and use the same, and did fully explain the principle and the several modes in which they had contemplated the application of that principle or character by which said invention may be distinguished from other inventions, and did particularly specify and point out the part, improvement or combination which they claimed as their own invention; and did furthermore accompany the whole with drawings and written references, which descriptions and drawings were duly signed by your orators, the said James Densmore and Amos Densmore, and were duly attested by two witnesses and were duly filed in
3 the Patent Office of the United States, and did moreover furnish to the said Commissioner of Patents a model of said invention or improvement of a convenient size to exhibit advantageously the several parts thereof; and did make oath before a person authorized by law to

administer oaths, that they did verily believe that they were the original and first inventors of the said invention and improvement; that they did not know or believe that the same was ever before known or used and that they were citizens of the United States, and did pay into the Treasury of the United States the sum of thirty-five dollars and complied with all the requisites of the statutes of the United States in such cases made and provided.

That thereupon the said Commissioner of Patents, upon the proceedings had therefor, did grant and issue to your orators, the said James Densmore and Amos Densmore, letters patent numbered 53794 for the said invention.

That said letters patent were issued from the said Patent Office of the United States, and under the seal of said office, and were signed by W. T. Otto, Acting Secretary of the Interior, and were countersigned by T. C. Theaker, Commissioner of said office, and were recorded, together with the aforesaid descriptions, specifications, and drawings in the said patent, in books kept for that purpose, and contained a short description or title of said invention or discovery, correctly indicating its nature and design, and in their terms granted to your orators, their heirs,
4 administrators, executors or assigns, for the term of seventeen years from said tenth day of April, one thousand eight hundred and sixty-six, the full and exclusive right and liberty of making, using, and vending to others to be used, the aforesaid invention, referring to the said specifications for the particulars thereof, a copy of which was duly annexed to the said letters patent, specifying what the said patentees claimed as their invention, and bore date the tenth day of April, one thousand eight hundred and sixty-six, and were duly delivered to your said orators, all which was done under and according to the provisions of the acts of Congress in such case made and provided.

And your orators further show that by virtue of the said grant and issue of the said letters patent your orators, the said James Densmore and Amos Densmore, became the sole owners of all the said rights and privileges granted and secured, or intended to be granted and secured, in and by the said letters patent.

And your orators further show that the said above-named letters patent, being inoperative or invalid by reason of a defective or insufficient description or specification, or by reason of the said patentees claiming in their specification as their own invention more than they had a right to claim as new, the said error having arisen by inadvertency, accident, or mistake, and without any fraudulent or deceptive intention, were heretofore duly surrendered to the aforesaid
5 Commissioner of Patents of the United States, and the further duty required by law was duly paid, in manner as thereby required, by the said patentees; and thereupon, on due proceedings had therefor, the aforesaid Commissioner of Patents, on the twenty-ninth day of May, one thousand eight hundred and sixty-six, did grant and issue to the said patentees, James Densmore and Amos Densmore, their heirs, administrators, executors, or assigns, a new patent, bearing date the day and year last aforesaid and signed by W. T. Otto, Acting Secretary of the Interior, and countersigned by T. C. Theaker, the Commissioner of Patents, for "a new and useful improved oil-tank car for carrying petroleum and other like substances in bulk," and which said last-mentioned letters patent were issued for the residue of the period then unexpired, for which the original patent aforesaid was granted, in accordance with the said patentees' corrected description and specification.

And your orators further show that a copy of the schedule annexed to the said last named letters patent, and forming a part of the same, is hereto annexed marked A; and your orators pray that the same may be taken as a part of this bill.

And your orators aver that the said patent, so reissued, together with the said corrected description and specification, have the same effect and operation in law, and in this suit, as though the same had been originally filed in such corrected form before the issuing of the original patent aforesaid.

And your orators further show unto your honors that on or about the twenty-eighth day of June, one thousand eight hundred and sixty-
6 six, the said James Densmore and Amos Densmore, by an instrument in writing under their hands and seals and bearing date and duly executed and delivered on said last named day, sold, assigned, transferred, and set over unto George W. N. Yost, one of your orators, the undivided one-fifth of all their right, title, and interest in and to the said invention and letters patent, as by said instrument, or a duly authenticated copy thereof in court to be produced, if required, will fully appear, and to which reference is had.

And your orators further show that the said instrument in writing was duly recorded in the said Patent Office of the United States.

And your orators further show unto your honors that by virtue of the premises, and of the aforesaid instrument in writing or assignment to said Yost, your orators, James Densmore, Amos Densmore, and George W. N. Yost, became and now are the sole and exclusive owners of the aforesaid invention and letters patent, and of all the rights and privileges granted and secured, or intended to be granted and secured, by the said letters patent and the said assignment.

And your orators further show that soon after they became as aforesaid vested with the aforesaid sole and exclusive right, they put into use and practical operation the aforesaid invention of a "new and useful improved oil tank car for carrying petroleum and other like substances in bulk," and did manufacture and use a large number of tank cars, according to the said invention and said letters patent, and expended and invested considerable sums of money, and bestowed great labor and trouble in and about said invention.

7 And your orators further show that their aforesaid exclusive right has been generally and fully acquiesced in and acknowledged by the public, and that they have ever since the acquiring of the said right by virtue of the grant and issue of the said letters patent, and of the said reissued letters patent as aforesaid, and now are, except for the doings of the defendants and their confederates as hereinafter set forth, and a few other infringers of said letters patent, been in the exclusive possession and enjoyment of the right aforesaid, and that the said exclusive right has been and is of great value to your orators, to wit, of the value of one million dollars, and that your orators will realize and receive large gains and profits therefrom if infringement thereof by said defendants and their confederates shall be prevented.

And your orators further show unto your honors, that after the grant and issue of the said last mentioned letters patent, in manner and form as aforesaid, according to the requirements of the acts of Congress in such case made and provided, and before the beginning of this suit, the said defendants, well knowing the premises and the rights secured to your orators as aforesaid, and in violation of said rights, and in infringement of said letters patent, and contriving to injure your orators, and

to deprive your orators of the profits, benefits, and advantages which might and otherwise would have accrued to your orators, and without the license and allowance and against the will of your orators, did, at the city of Cleveland, in the county of , in the State of Ohio, in the district of Ohio aforesaid, and elsewhere in the United States, unlawfully and wrongfully make, use, and vend to others to be used,
8 the aforesaid invention, and did cause the same to be done, and did make and use one hundred and more new and useful improved oil tank cars for carrying petroleum and other like substances in bulk made according to and employing and containing said invention, and are injuring the market and diminishing the demand for said tank cars, to the great damage and injury of your orators.

And your orators further show unto your honors that the aforesaid using of the said invention by said defendants and their confederates, and their preparation and avowed determination to continue the same, and the other aforesaid unlawful and wrongful acts, have the effect to induce and encourage other persons to infringe and defy the letters patent aforesaid, and the aforesaid exclusive right and privilege of your orators.

And your orators further show unto your honors that the said defendants have derived and received and are still deriving and receiving from the aforesaid making and using of the said invention, large gains and profits, but how many of said tank cars have been so made and used by said defendants, or what amount of such gains and profits have been derived and received by said defendants, your orators do not know and cannot set forth, but pray that said defendants may be compelled to make discovery of the method and process by which is made and used the aforesaid tank cars, so as aforesaid made and used by the said defendants.

And your orators further show unto your honors that the said
9 defendants have been warned and requested and notified to desist and refrain from said infringements, and said unlawful and wrongful acts, but that said warning and request and notice has been wholly disregarded by said defendants, and that said defendants still continue the infringements and unlawful and wrongful acts aforesaid.

And your orators further show unto your honors that they are ignorant and cannot set forth how or in what manner the said defendants are engaged in the said infringements and unlawful and wrongful acts hereinabove complained of, except that your orators, upon information and belief, aver that they are so engaged therein at the place aforesaid as principals; and your orators pray that said defendants may make discovery thereof, and may fully and particularly set forth how and to what extent they are engaged therein.

And your orators pray that the said defendant may be compelled by a decree of this court to account for and pay over to your orators all such gains and profits as have accrued or arisen to or been received or earned by said defendants by reason of the aforesaid making and using of the said invention, and all such gains and profits as your orators would have received but for the said infringements and the said unlawful acts and doings of the said defendants. And that the said defendants, their attorneys, solicitors, servants, agents, and workmen, and each and every of them, be perpetually enjoined and restrained by a writ
of injunction issuing out of and under the seal of this honorable
10 court from directly or indirectly making, constructing, vending, working, or in any manner putting into practice, operation, or use, or in anywise counterfeiting or imitating said invention or any part

thereof, or any machine, device, method, or process in accordance therewith or with any part thereof. And that the said defendants may be decreed to pay the costs of this suit, and that your orators may have such further relief or such other relief as the equity of the case may require and to your honors shall seem meet.

To the end, therefore, that the said defendants may, if they can, show why your orators should not have the relief hereby prayed, and may full, true, and perfect answer make to the premises and to the several matters hereinbefore set forth and averred according to the best and utmost of their knowledge, remembrance, information, and belief as fully and particularly as if the same were here repeated paragraph by paragraph, and the said defendants specially interrogated thereunto severally, may it please your honors to grant unto your orators the writ of subpœna ad respondendum issuing out of and under the seal of this honorable court directed to the said defendants, and commanding them, by a certain day and under a certain penalty, to be and appear in this honorable court and make answer to this bill of complaint, and to perform and abide by such order and decree herein as may be made against them.

And your orators will ever pray, &c.

JAMES DENSMORE.
AMOS DENSMORE.
G. W. N. YOST.
JO. C. CLAYTON,
Solicitor and of Counsel for Complainants.

UNITED STATES OF AMERICA,
Northern District of Pennsylvania, ss:

On this 22nd day of April, 1870, before me personally appeared James Densmore, one of the above-named complainants, who, being by me duly sworn, did depose and say that the foregoing bill of complaint subscribed by him has been read by him, and that he knows the contents thereof; that the same is true of his own knowledge, except as to the matters therein stated on information and belief, and as to those matters he believes it to be true.

And the said James Densmore did further depose and say that he verily believes that he himself and Amos Densmore are jointly the original and first inventors of the inventions referred to in said bill and described and claimed in the schedule in the bill mentioned.

WM. McLAUGHLIN,
U. S. Commissioner.

SCHEDULE A.

The schedule referred to in the reissued letters patent No. 2261 granted to J. & A. Densmore May 29, 1866, and making part thereof.

To all whom it may concern:

Be it known that we, James Densmore and Amos Densmore, of Meadville, Crawford County, Pennsylvania, have invented a new and improved oil tank car for carrying petroleum and other like liquid substances in bulk in tank on railway cars, and the following full, clear, and exact description will show the construction and operation thereof:

On the accompanying drawing figure 1 is a side view and figure 2 a top view of our invention, and the letters marked thereon refer to
12 and correspond with the same letters in the description.

On the platform of an ordinary railway car, AA, erect two large, light, tight, firm, stout tanks, B, B, of wood staves, hooped, or of

sheet-iron riveted and caulked, or of other materials, and put each tank directly over one of the trucks, so that the strain of the weight of the load will be upon those parts of the car that are stronger and better able to bear it.

On the top of each tank put a frame of four bars, C, C, C, C; through the corners of the frame, close to and outside of the tank and down through the platform of the car, pass the bolts 1, 2, 3, 4; on the ends of the bolts, above the frame and below the platform, put screws and nuts and washers, and fasten and press the tank down upon the car firmly by means of the frame and bolts and screws; besides attaching and fastening the tank and car together, the frame and bolts will act as guys and braces, and tend to prevent any shock or jar from the swaying of the car.

Upon the platform, close to the outside and bottom of the tank, bolt the cleats or stops H, H, H, H, to keep the tank firmly in its place and prevent any jar or moving from any sudden stopping or starting of the car.

In the top head of each tank make a man-hole through which to pour in the substance to be carried, also for a man to get into the tank for any purpose. Around the man-hole put a casing, and over the man-hole put a man-head or cover D, to prevent rain, snow, or anything from leaking or falling into the tank.

13 At the bottom of each tank put in a faucet, E, by which to draw off the contents.

Up the side of each tank, next the end of the car, put the steps F, to enable one to get on or off the tanks readily; and across from one tank to the other put the runway G, to enable breakmen and others to pass over the cars with facility.

The nature of our invention consists in combining two large, light, tight, firm, stout tanks with an ordinary railway car, making the tank practically a part of the car, so as to carry the desired substance in bulk in the car itself, or in a permanent fixture or part thereof, instead of in barrels, casks, hogsheads, tierces, or other movable vessels or packages, as is now universally done on railway cars, and thereby save carrying the weight of the barrels, casks, hogsheads, tierces, or other movable vessels or packages.

What we claim as our invention, and desire to secure by letters patent, are—

First. The two tanks B, B (or their equivalent), when constructed and operating in combination with an ordinary railway car, substantially as and for the purposes set forth.

Second. The two tanks B, B (or their equivalent), when set directly (or nearly so) over the car trucks, and when constructed and operating in combination with an ordinary railway car, substantially as and for the purposes set forth.

Third. The frames C, C, C, C, the bolts 1, 2, 3, and 4, and the cleats H, H, H, H, when constructed and operating in combination with tanks, B, B, the man-holes and manheads D, D, and the faucets E, E, and the runway G, when constructed and arranged in combination with tanks B, B, and an ordinary railway car, substantially as and for the

14 purposes set forth and described.

JAMES DENSMORE.
AMOS DENSMORE.

Witnesses:
C. M. BOUSH.
J. M. SCHMIDT.

Subpœna.

THE UNITED STATES OF AMERICA,
Northern District of Ohio:

The President of the United States of America to the marshal of the northern district of Ohio, greeting:

You are hereby commanded to summon William C. Schofield, John Alexander, Matthew Wilson, Joseph Hussey, William D. McBride, Daniel P. Eells, John D. Rockefeller, William Rockefeller, Samuel Andrews, and Henry M. Flagler, if they be found in your district, to be and appear in the circuit court of the United States for the northern district of Ohio aforesaid, at Cleveland, on the first Monday in June next, to answer a certain bill in chancery, filed and exhibited in said court against them by James Densmore, Amos Densmore, and George W. N. Yost.

Hereof they are not to fail, under the penalty of the law thence ensuing, and have you then and there this writ.

Witness the honorable Salmon P. Chase, Chief Justice of the United States, this 6th day of May, A. D. 1870, and in the 94th year of the Independence of the United States of America.

[SEAL.] EARL BILL, *Clerk.*

MEMORANDUM.—The said defendants are required to enter their
15 appearance in this suit, in the clerk's office of said court, on or before the first Monday of June, 1870, otherwise the said bill may be taken pro confesso.

EARL BILL, *Clerk.*

Return.

NORTHERN DIST. OF OHIO, *ss:*

On the 11th day of May, A. D. 1870, I delivered to each of the within named William C. Schofield, Joseph G. Hussey, Wm. D. McBride, Daniel P. Ells, John D. Rockefeller, Samuel Andrews, and Henry M. Flagler, a true copy of this writ, and also a copy of the bill of complaint in the within entitled cause, at Cleveland, Cuyahoga County, Ohio.

R. HASTINGS,
U. S. Mar.,
By E. A. ABBOTT,
Dept.

Service, 14.00; 7 copies, 3.50; actual expenses, 5.00—$22.50.

NORTHERN DISTRICT OF OHIO, *ss:*

And I further return that the within named John Alexander is in Europe, William Rockefeller is in New York, and Matthew Wilson deceased.

R. HASTINGS,
U. S. Marshal,
By H. THOMPSON,
Dept.

Answer.

United States circuit court, northern district of Ohio. In equity.

The joint and several answers of William C. Scofield, John Alexander, Matthew Wilson, Joseph G. Hussey, William D. McBride, Daniel P. Eells, John D. Rockefeller, William Rockefeller, Samuel Andrews, and Henry M. Flagler, the defendants, to the bill of complaint of James Densmore, Amos Densmore, and George W. N. Yost, complainants.

These defendants, respectively, now and at all times hereafter,
16 reserving to themselves all and all manner of benefit or advantage of exception or otherwise that can or may be had or taken to the many errors, uncertainties, and imperfections in the said bill contained, for answer thereto, or to so much thereof as these defendants are advised it is material or necessary for them to make answer to, severally answering, say:

That these defendants do not know and are not informed, save by said bill of complaint, whether or not, on and prior to the 10th day of April, A. D. 1866, the said James Densmore and Amos Densmore were citizens of the United States, and they leave the complainants to make such proofs thereof as they are advised.

And these defendants, further answering, on information and belief, deny that the said James Densmore and Amos Densmore were the original and first inventors of a "new and useful improved oil tank car for carrying petroleum and other like substances in bulk," or any substantial or material parts thereof, which was not known or used by others before their said alleged discovery or invention thereof, and not at the time of their said alleged application for letters patent of the United States for said alleged invention or discovery in public use or sale with their consent or allowance as the alleged inventors or discoverers thereof, contrary to the provisions of the statutes of the United States in such cases made and provided; but, on the contrary, these defendants allege, on information and belief, that the same invention, and all the substantial and material parts thereof, prior to any invention
17 thereof, or of any substantial or material parts thereof, by the said James Densmore and Amos Densmore, were publicly known and publicly used by various and divers persons in this country, and that among such persons are John Scott, who now resides at Lawrenceville, in the State of Pennsylvania, and who had knowledge of and publicly used the same at Lawrenceville, Allegheny County, Pennsylvania; W. W. Horton, who now resides at Freeport, in the Satte of Illinois, and who had knowledge of and publicly used the same at Freeport, Illinois; and G. W. Howard, who now resides at Pontiac, in the State of Michigan, and who had knowledge of and publicly used the same at Pontiac, Michigan.

And these defendants, further answering, on information and belief, allege that the aforesaid prior public uses of the said alleged invention were, for more than two years prior to any application, made by the said James and Amos Densmore for letters patent of the United States for the said alleged invention, and were with the consent and allowance of the said James and Amos Densmore.

And these defendants, further answering, on information and belief, allege that prior to any alleged invention thereof by said James and Amos Densmore the same invention, and all the substantial and mate-

rial parts thereof, were patented in and by the following letters patent, viz:

Letters patent of the United States granted to John Scott, under date of January 20th, A. D. 1863; letters patent of the United States granted to W. W. Horton, under date of March 21st, A. D. 1865; letters patent of the United States granted to G. W. Howard, under date of September 26th, A. D. 1865; letters patent of the United States, granted
18 to R. C. Clyde, under date of February, 11th, A. D. 1862; letters patent of the United States granted to S. J. Seely, under date of June 2nd, A. D. 1863; letters patent of the United States granted to J. F. Keeler, under date of July 18th, A. D. 1865; letters patent of the United States granted to D. Lott, under date of August 1st, A. D. 1865; and letters patent of the United States granted to J. F. Keeler, under date of March 27th, A. D. 1866.

And these defendants, further answering, say that they do not know, and are not informed save by said bill of complaint, whether or not the said James Densmore and Amos Densmore duly made application in writing to the Commissioner of Patents of the United States, expressing a desire to obtain an exclusive property in said alleged invention, and praying that letters patent of the United States might be granted them therefor; whether or not at the time of making the said alleged application for said letters patent the said James Densmore and Amos Densmore delivered to said Commissioner of Patents a written description of the said alleged invention, or of the process and manner of making, constructing, and using the same in such full, clear or exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which the said alleged inventions appertains, or with which it is most nearly connected, to make, construct or use the same, or did fully explain the principle and the several modes in which they had contemplated the application or character by which said
19 alleged invention may be distinguished from other inventions, or did particularly specify or point out the part, improvement, or combination which they claimed as their own invention, and they therefore deny the same, and leave the complainants to make such proof of each and all of said allegations as they may be advised will be sufficient.

And these defendants, further answering, say that they do not know, and are not informed save by said bill of complaint, whether or not the said James Densmore and Amos Densmore did accompany the said alleged application with drawings or written references duly signed by them, and duly attested by two witnesses, and duly filed in the Patent Office of the United States, or did furnish to the said Commissioner of Patents a model of alleged invention or improvement of a convenient size to exhibit advantageously the several parts thereof; or whether or not the said James Densmore and Amos Densmore did make oath before any person authorized by law to administer oaths, that they did verily believe that they were the original and first inventors of the said alleged invention and improvement, or that they did not know or believe that the same was ever before known or used, or that they were citizens of the United States, or did pay into the Treasury of the United States the sum of thirty-five dollars, or did comply with any or all the requisitions of the United States in such cases made and provided, and they therefore deny the same, and leave the complainants to make such proof of each and all of said allegations as they may be advised is necessary.

20 And these defendants, further answering, say that they do not know, and are not informed save by said bill of complaint, whether

or not the said Commissioner of Patents upon proceedings had therefor did grant or issue to the said James Densmore and Amos Densmore letters patent numbered 53794, or otherwise, for the said alleged letters patent were issued from the said Patent Office of the United States, or under the seal of said office, or were signed by W. F. Otto, Acting Secretary of the Interior, or were countersigned by T. C. Theaker, Com, missioner of said office, or were recorded together with said descriptions-specifications or drawings in the said Patent Office in books kept for that purpose, or otherwise, or contained a short description or title of said alleged invention or discovery, correctly indicating its nature and design, or in their terms granted to complainants, their heirs, administrators, executors or assigns, for the term of seventeen years or otherwise, the full or exclusive right or liberty of making, using, or vending to others to be used, the said alleged invention, referring to the said specifications for the particulars thereof, or whether copy of the same was duly annexed to the said alleged letters patent, specifying what the said alleged patentees claimed as their invention, or whether said alleged letters patent bore date the 10th day of April, 1866, or were duly delivered to said James Densmore and Amos Densmore, or whether the same was done under and according to the provisions of the acts
21 of Congress in such case made and provided, and they therefore deny the same, and leave the complainants to make such proof of each and all of said allegations as they may be advised is requisite.

And these defendants, further answering, on information and belief, deny that the said James Densmore and Amos Densmore, by virtue of said alleged letters patent, became owners of any rights or privileges whatever.

And these defendants, further answering, say that they do not know and are not informed, save by said bill of complaint, whether or not the said alleged letters patent were for any reason surrendered and new letters patent duly issued to said James Densmore and Amos Densmore under date of May 29th, A. D. 1866, for the residue of the then unexpired period of the said alleged original letters patent, and they therefore deny the same, and leave the complainants to make such proof of each and all of said allegations as they may be advised is requisite.

And these defendants, further answering, say that they do not know and are not informed, save by said bill of complaint, whether or not on the 28th day of June, A. D. 1866, or at any other time, the said James Densmore and Amos Densmore, by an instrument in writing under their hands and seals, or otherwise, dated, duly executed and delivered on said last-named day or at any other time, sold, assigned, transferred or set over unto said George W. N. Yost, one of the complainants, the undivided one-fifth or other part of all their alleged right, title,
22 and interest in and to the said alleged invention and letters patent, and they therefore deny the same and leave the complainants to make such proof of each and all of said allegations as they are advised may be required.

And these defendants, further answering, say that they do not know and are not informed, save by said bill of complaint, whether or not the said alleged instrument in writing or assignment was duly recorded in said Patent-Office of the United States, and they therefore deny the same, and leave the complainants to make such proof thereof as they are advised may be required.

And these defendants, further answering, on information and belief, deny that the said complainants, or either of them, became or are the

owners of any rights or privileges under said alleged letters patent and said assignment.

And these defendants, further answering, say that they do not know and are not informed, save by said bill of complaint, whether or not complainants put into operation the said alleged invention of "a new and useful improved oil-tank car for carrying petroleum and other like substances in bulk," or whether or not they manufactured and used any tank cars according to said alleged letters patent, or whether or not they expended or invested any money, or bestowed any labor or trouble in and about said alleged invention, and they therefore deny the
23 same, and leave the complainants to make such proof of each and all of said allegations as they are advised may be requisite.

And these defendants, further answering, deny that complainants or either of them have any exclusive rights under and by virtue of said letters patent or said assignment, and deny that their exclusive right or the validity of said letters patent or any part thereof have ever been acquiesced in or acknowledged by the public; and deny that the complainants have been or are now in the exclusive possession or enjoyment of said alleged right, but allege that said tank car claimed by the complainants has been in public use for years without resistance or objection.

And these defendants further answering deny that they have violated the rights of complainants; they deny that they have infringed or are infringing their said alleged letters patent or any part of the same; they deny that they have unlawfully or wrongfully made, used or sold, or are making, using or selling the said alleged invention or any part thereof.

And these defendants further answering say that the said alleged letters patent are void for want of invention, the said alleged invention being for nothing requiring any more ingenuity or skill than is possessed by an ordinary mechanic acquainted with the business to which said alleged invention appertains.

And these defendants further answering allege that at the September term, A. D. 1866, of this honorable court, complainants commenced in this court a suit at law against these defendants for an alleged infringement of the said reissued letters patent; that in said suit these
24 defendants put in substantially the same defences as are herein set up; that upon a trial of the said case at the January term, A. D. 1868, a verdict was rendered for these defendants; that thereafter, at the September term, A. D. 1868, of said court, a new trial was granted the plaintiff in said case; and at the January term, A. D. 1869, of *of* said court the plaintiffs dismissed their suit without again coming to trial.

And these defendants further answering say that on the 3d day of September, A. D. 1866, these complainants commenced a suit at law in the circuit court of the United States for the southern district *district* of New York against Josiah Snow, A. J. Jackson, and B. F. Buck for an alleged infringement of the said reissue of letters patent; that the defences set up by the defendants in said suit were substantially the same that these defendants have herein set up; that upon a trial of the said case in said court upon submission to a jury a verdict was rendered for the defendants May 1st, A. D. 1867, the jury finding that the said alleged invention had been in public use before the application of the said James Densmore and Amos Densmore for a patent thereon, and that said letters patent and reissue were void for want of novelty of invention.

And these defendants submit to this honorable court that all and

every of the matters in the said complainants' bill mentioned and
25 complained of are matters which may be tried and determined at law, and with respect to which the said complainants are not entitled to any relief from a court of equity, and ask that they, these defendants, may have the same benefit of this defence, and of the matters and things herein set forth, as if the said bill had been demurred to, when a demurrer would have been proper, or as if the same had been specially pleaded to said bill, when such plea would have been proper.

And these defendants submit that said complainants have no right to any further or other answer to the said bill of complaint, and no right to any injunction, account, or relief prayed for in said bill.

And these defendants pray to be hence dismissed with their reasonable costs and charges in this behalf sustained.

R. P. RANNEY & WILLEY,
CAREY & TERRELL,
Defendants' Solicitors.

UNITED STATES OF AMERICA,
Northern District of Ohio:

Before me, a U. S. commissioner, the undersigned authority, personally appeared William C. Schofield, who, being sworn according to law, says that he is one of the aforesaid defendants, and that the facts set forth in the foregoing answer are true to the best of his knowledge, information, and belief.

W. C. SCOFIELD.

Subscribed in my presence by said Wm. C. Scofield, and by him sworn to before me, this 13th day of September, A. D. 1870.

CHAS. H. ROBINSON,
U. S. Commissioner N. D. of Ohio.

26 *Replication.*

United States circuit court, northern district of Ohio. In equity.

DENSMORE ET AL.
vs.
SCHOFIELD ET AL.

The replication of complainants to the answer of respondents:

These repliants, saving and reserving to themselves all and all manner of advantage of exception to the manifold insufficiencies of the said answer for replication thereunto, say that they will aver and prove their said bill to be true, certain, and sufficient in the law to be answered unto, and that the said answer of the said defendants is uncertain, untrue, and insufficient in the law to be replied unto by these repliants—without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed, and avoided, traversed or denied, is true. All which matters and things these repliants are and will be ready to aver and prove as this honorable court shall direct, and humbly pray as in and by their said bill they have already prayed.

Dated New York, Nov. 12th, 1870.

JNO. C. CLAYTON,
Sol'r and of Counsel for Complainants.

27 *Evidence for compl't by stipulation.*

Circuit court of the United States, northern district of Ohio. In equity.

JAMES DENSMORE ET AL.
vs.
WILLIAM C. SCHOFIELD ET AL.

Stipulations in behalf of complainants.

Defendants admit (waiving all further or other proof thereof, but subject to all exception for want of relevancy or admissibility) that reissued letters patent of the United States were granted and delivered to James and Amos Densmore, complainants, on the 29th day of May, 1866, and numbered 2261, for an improved tank-car for transporting petroleum in bulk, and that the undivided one-fifth of said letters patent was assigned to G. W. N. Yost, one of the complainants, on the 28th day of June, 1866, and that said assignment was duly recorded in the United States Patent Office, and that said reissued letters patent and assignment, or certified copies thereof, are now in evidence and may be read as evidence at the hearing in this cause.

II. That the defendants have made and used in the city of Cleveland, and at other places within the jurisdiction of this court, on and since the 28th day of June, 1866, and are now so using a large number of tank-cars (their number and the value of their use in case a decree should be rendered for complainants to be ascertained on reference after hearing) for transporting petroleum in bulk of the following construction, viz: two large, slightly conical tanks, made of wooden staves,
28 hooped, and of a diameter nearly equal to the width of the car, and of about four or five feet in height, secured to the platform of a "flat-car" or "cattle-car" by means of cleats nailed to the car, each tank being placed over one of the trucks, each of the said tanks having a man-hole on top and a faucet near the bottom, and a capacity of forty or more barrels.

III. This stipulation shall not have the effect of excluding any other evidence on the same points.

Cleveland, Jan'y 30, 1871.

R. P. RANNEY AND
WILLEY, CAREY & TERRELL,
Sol's for Defendants.
JO. C. CLAYTON, *Pro Orat.*

Evidence for respondent by stipulation.

Circuit court of the United States, northern district of Ohio. In equity.

JAMES DENSMORE ET AL.
vs.
WILLIAM C. SCHOFIELD ET AL.

Stipulations in behalf of defendants.

Complainants admit (waiving any further or other proof thereof, but subject to all exceptions for want of relevancy or admissibility) that in the circuit court of the United States for the southern district of New York, on the third day of September, 1866, complainants commenced an

action at law against Josiah Snow & others for an infringement of the said reissued letters patent; that on the trial, on the first day of
29 May, 1867, before Judge Shipman and a jury, complainants put in evidence said reissue and assignment, and proved the infringement by said Snow & others of the first two claims in said reissue since said assignment and before the commencement of said action, and gave some evidence of utility, and rested; whereupon the said Snow and others, defendants, put in evidence the other patents mentioned in defendants' answer in this cause, and the plaintiffs' *improved* James Densmore and Daniel T. Watson in rebuttal, on which evidence the case was submitted and argued by Mr. Keller for the plaintiffs and R. H. Kimball for defendants, when the judge charged the jury, among other things intimating to the jury great doubt as to whether said first two claims, or either of them, were not void for want of patentability, saying, among other things, to the jury, that if they thought the putting two water hogheads on a wagon would be patentable, then the plaintiffs might recover; that the charge of the said judge was contemptuous and unfavorable, and that the jury, on very brief consultation, found a verdict for defendants, on which judgment was entered, which still remains in force, no steps having been taken to disturb it.

If the above is not admitted as evidence, then that the same may be read on the hearing as a true report of said case.

II. It is admitted that the original letters patent, of which the letters patent declared on in this suit are a reissue, together with the other letters patent mentioned in the defendants' answer, are now in evidence, and may be read as evidence on the hearing of this cause.

30 III. This stipulation shall not have the effect of excluding any other evidence on the same points.

New York, Jan'y 30, 1871.

JO. C. CLAYTON,
Sol'r Pro Orat.

31 *Testimony of James Densmore et al.*

THE UNITED STATES OF AMERICA,
Northern District of Ohio:

At a stated term of the circuit court of the United States, within and for the northern district of Ohio, begun and held at the city of Cleveland in said district on the first Tuesday in January, being the sixth day of saith month, in the year of our Lord one thousand eight hundred and seventy-four, and of the Independence of the United States of America the ninety-eighth—present, the honorable Martin Welker, district judge—among the proceedings then and there had were the following, to wit:

JAMES DENSMORE ET AL.
vs. } 2103. Chancery.
W. C. SCOFIELD ET AL.

WEDNESDAY, *Jan. 21st*, 1874.

Upon application of said defendants, by their solicitors, it is ordered that Thomas Roddy be, and he is hereby, appointed a special examiner in this case to take the testimony of witnesses herein.

U. S. circuit court, northern district of Ohio. Equity.

JAMES DENSMORE ET AL.
vs.
WM. C. SCOFIELD ET AL.

Depositions of James Densmore and others, and evidence taken by consent before Thomas Roddy, examiner, under the 67th rule in equity, to be read as proof on final hearing.

32 MEADVILLE, PA., *Jan'y 21st, A. D.* 1874.

Present, for complainants, J. C. Clayton, esq.
" " defendants, H. S. Sherman, esq.

Complainants' solicitor puts in evidence a certified copy of the reissued letters patent for a petroleum tank car granted to James and Amos Densmore, May 29th, 1866; also a certified copy of the records of the Patent Office of an assignment of the one-fifth interest in the said letters patent to George W. N. Yost, dated June 28th, 1866, and will produce the said papers at the hearing of the said case. Also a certified copy from the records of this court of the evidence by stipulation for complainant, filed Feb'y 7th, 1871. (It is marked Complainants' Exhibit No. 1.)

JAMES DENSMORE, being produced and affirmed on the part of the complainant', deposeth as follows in answer to interrogatories:

Q. No. 1. What is your name, age, residence, and occupation?

Ans. 1. My name is James Densmore; residence, Meadville, Pennsylvania; aged 54 years; occupation, soliciting patents.

Q. No. 2. Are you and your brother Amos the patentees and inventors of the invention described in the letters patent under which this suit is brought?

A. No. 2. We are.

33 Q. No. 3. What and where was your business at the time when you made the invention in suit?

Ans. No. 3. At the Miller farm on Oil Creek, Pennsylvania, refining and producing petroleum; this was in 1864.

Q. No. 4. Describe the mode or modes that were then in use for shipping oil on railroads.

Ans. No. 4. There was but one mode, and that was to put the petroleum in packages and put the packages onto or into railroad cars, and transport them thence to the place of destination. The packages usually were forty-gallon casks, originating from the fact that empty whiskey barrels or casks were first used for the purpose, and such barrels or casks are made about that size, but larger wine casks, tierces, hogsheads, and other such packages were occasionally used.

Q. No. 5. How good were your facilities for knowing the modes for transporting oil on railroads during the year 1864?

Ans. No. 5. I was living and doing business in the midst of the petroleum producing region and daily witnessed immense shipments of petroleum in the way described.

Q. No. 6. When did you take the first steps to reduce to actual practice this invention, and when did you ship the first tank-car made in accordance therewith?

Ans. No. 6. In November, 1864, myself and then partner, Mr. Daniel T. Watson, began the making of tanks for the purpose of combining

with cars to make tank-cars. We employed a man, a joiner, procured him the lumber and set him to preparing the staves. We shipped
34 the first tank-car loaded with petroleum the last week in May or fore part of June, 1865.

Q. No. 7. After shipping that first car what was the extent to which you and those united with you used such tank-cars for transporting oil during the year 1866 and the year 1867?

Ans. No. 7. During the years 1866 and 1867, the firm of Watson, Densmore & Co., of which I was the largest partner in interest, and the Oil Tank Company, of which Watson, Densmore & Company were one-fifth owners, kept in constant use about two hundred to two hundred and eighty tank-cars.

Q. No. 8. What, if any, dividend was declared on the profits arising from the use of those tank-cars during any period of such use, if you can now give it from your memory?

Ans. No. 8. The firm of Watson, Densmore & Co. bought petroleum on Oil Creek, sent it to New York and sold it, and didn't make or have any separate account of the profits of the use of tank-cars as such. The Oil Tank Company was simply a transportation company, transporting petroleum in tank-cars, and that company declared a dividend of about ninety-three thousand dollars the first seven months of its existence.

Q. No. 9. Describe the construction of those tank-cars, referring in your description to the invention described in letters patent in
35 this case, by way of illustration, stating what, if any, the differences exist.

Ans. No. 9. The tank-cars that Watson, Densmore & Company used were precisely as described in the patent. They were composed of a common flat car combined with which were two large tanks, each as wide at the bottom as the platform of the car and about fifty inches high, slightly conical in form or tapering towards the top; each tank had two tight heads in it, one at top and one at bottom; each tank had an aperture large enough for a man to enter, called a manhole, in the top head with a tight removable cover on it, for the purpose of receiving the petroleum to be shipped and to enable a man to enter to clean out and repair the tank, and each had a faucet at the bottom whereby to empty the tank, and each tank was fastened to the car directly over a truck by series of bolts passing from a frame work on the top of the tank down and through the platform of the cars.

Each tank was made to hold an amount of petroleum equal to half the weight which the railway companies would permit the cars to carry. The tank-cars that the Oil Tank Company made and used were precisely like those of Watson, Densmore & Company, except that the Oil Tank Company found that the tanks could be combined with the cars as readily and more cheaply by fastening them down by a series
36 of large cleats next the tanks at the bottom instead of using the long bolts and frame-work described in the patent.

Ques. No. 10. You have stated that the first loaded tank-car, according to your invention, was shipped in May or June of 1865. Prior to that date, to your knowledge, had any tank-cars of a different construction from yours been used?

(Question objected to by solicitors for defendant.)

Ans. No. 10. Not at all.

Ques. No. 11. What was the advantage during the time that you were using the two hundred or two hundred and eighty tank-cars in the use of those cars over the mode previously in use? I mean barrels or pack-

ages in use on the cars. Please detail this in point of freight and other points, if any.

Ans. No. 11. For the larger part of the time the advantage was that the tank-car was simply regarded as a common freight car and treated as such by the railway companies, and the petroleum on or in such cars was carried by the pound. Three hundred pounds of petroleum make about forty-five gallons, whereas forty-five gallons of petroleum and a common petroleum barrel or cask weigh about four hundred pounds, and we could carry by that method by tank cars four hundred pounds of petroleum at the same price for which a common barrel of
37 petroleum was carried when carried in a barrel, the gain being thirty-three & one-third per cent. Besides, we saved by using tank-cars a large amount of money necessarily invested in barrels if shipping was done in barrels, and a large amount of labor in handling barrels and repairing barrels, called cooperage, and the tank-cars were returned empty at a less price than we could get empty barrels returned.

Ques. No. 12. How did the tank-cars compare with the barrel method in respect to leakage, and in respect to loading and unloading?

Ans. No. 12. I don't know that we ever decided in our own minds the percentage of difference, but the loss by leakage by shipping in tank-cars was found to be very much less than by shipping in barrels, and the expense of loading and unloading tank-cars was found to be much less than loading and unloading by barrels.

Q. 13. How long had you and those in interest with you been engaged in the business of shipping oil in your tank-cars before other parties, not in interest, began to use tank-cars like yours?

(Question objected to by solicitor for defendants.)

An. 13. Perhaps a month to six weeks, or two months.

Q. 14. State as near as you can the extent to which your invention, after you had used a number of cars, went into use, and how speedily; and by whom, without your authority, up to the time of bringing this suit.

A. 14. During the summer and fall of 1864, having myself but little means, I laid the invention before such wealthy oil producers
38 and shippers as I met and became acquainted with, and invited them to co-operate with me. Every one refused and derided and contemned the suggestion. Finally myself and partner, Mr. D. T. Watson, decided to try the experiment. I went to the superintendant of the Atlantic and Great Western Railroad Company, D. McLaren, of this city, to procure the use of cars for the purpose. He hesitated, raised many objections, finally consented that we might have two cars if the Erie Railway Company would also let us have two cars. I then went to New York, to Mr. Hugh Riddle, superintendent of the Erie Railway, to procure cars, and he said he would let us have as many as the Atlantic and Great Western would let us have to use, and directed two cars to be set aside to our use. Thereupon Mr. McLaren, of the Atlantic company, directed two cars to be sent to Miller farm for our use. The two cars sent to Miller farm we mounted with wooden tanks and made them into tank-cars. Nearly simultaneously therewith we got made in New York four sheet-iron tanks, and mounted them upon two cars set aside for us by Mr. Riddle, and made them into tank-cars. As soon as we had made one or two trips each with those tank-cars to New York, Mr. George W. N. Yost and Mr. W. H. Doan began making tank-cars for Cleveland trade. Messr. Yost and Doan were then

39 and had been the largest barrel shippers in the trade, were well acquainted with railway officials, and could and did procure the use of all the cars they wanted for tank-car purposes; and, if I remember right, they obtained and mounted and made into tank-cars one hundred cars within two or three months after we began to ship, whereas we had not been shipping at all, were entirely unacquainted with the railway officials, and could only procure the use of a very few cars.

Directly after the Cleveland tank line was organized by Doan and Company several parties in Cleveland, I do not know their names, but they were refiners and shippers of petroleum, among whom were Alex. Schofield and Company, Hussey and McBride, and, if I remember the names, Rockefeller and Andrew Clark Payne and Company, and others, defendants in this suit, applied to the superintendent of the Atlantic & Great Western Railway for cars to be made into tank-cars; so I was informed by him, Mr. D. McLaren. Mr. McLaren told me that he told them that he wouldn't allow separate companies to have cars, but if all the Cleveland parties would combine together he would let them have a hundred cars, and they must divide them among themselves to suit themselves, but that the railway company must know them all as one company, corporation, or arrangement. Doan and Company had procured and made into tank-cars all the so-called flat cars that railway wanted to spare for that purpose, but the railway company had

40 a large number of rack-cars or stock-cars, and the Cleveland parties had to take rack-cars to make their tank-cars of. All I know of the number they had is from the information I thus got from Superintendant McLaren. Soon afterwards the Empire Transportation Company, doing business mostly on the Philadelphia and Erie Railway, and its connections with New York, commenced making tank-cars. They were made precisely like ours, with the exception that they put on three tanks instead of two on each car, the third tank being in the middle of the car. Other parties also obtained cars of the Erie Railway Company, Snow, Buck and Company, Robbins, Jacob and Company being among the number, and made tank-cars, so that within a year and a half or two years from the time we first shipped in tank-cars there were a thousand to fifteen hundred tank-cars made and in use.

(Answer objected to generally by solicitor for def'ts.)

Q. 15. You have stated that when you began shipping in your tank-cars, in 1865, that all the oil then shipped by rail was shipped in packages or barrels. Please state, according to your best estimate, what percentage of oil was shipped in barrels on cars during the year 1867, and what percentage was so shipped at the time this suit was brought in 1870.

A. 15. The tank-cars at first were only designed for and used

41 for shipping what was called crude petroleum, and was not intended or used for refined petroleum. The advantage of shipping crude petroleum by tank-car has been demonstrated as so great that during 1867, and from that time since, at least nine-tenths or more of all petroleum shipped by railway has been shipped by tank-cars, and since 1870 I do not know of a single car load being shipped other than by tank-car. Since 1868 a great deal of refined oil has been shipped by tank-car, but I do not know what proportion.

(Answer objected to by def'ts' solicitor.)

Q. 16. Before and at the time you began using the tank cars, what was the price of empty oil barrels on Oil Creek, and what did it cost to have them returned to you from New York? And state what, if any,

advantage there was in the use of tank cars over the use of barrels in consequence of the cost of such barrels and their return freight.

A. No. 16. The price of barrels on Oil Creek varied from two dollars to four dollars each, fluctuating according to the demand, the average price being two dollars and seventy-five cents to three dollars. I didn't ship any in barrels; our company didn't ship any in barrels, and I don't know, of my own knowledge, anything about the cost of return barrels; all I know about it is from the inquiries of railway officials; and, if I remember right, from the information I then got, the price of returning a barrel from New York to Oil Creek averaged seventy-five cents. At that time crude empty barrels
42 in New York would sell from a dollar to one and a half dollar each. At first it cost us thirty-three dollars per tank car, return freight from New York to Oil Creek. As I said, I know nothing of this advantage by my own experience in shipping barrels; but, from such information as I could get, this advantage of the tank cars was very considerable.

(Answer objected to by def'ts' attorney.)

The witness asks to make the following explanation in reference to question No. 13:

We made our first shipment the last of May or June of 1865; it was a month or more before we got another shipment made, and it took a month to make a shipment the round trip in the beginning, and parties were watching to see the result of the experiment. As soon as we had made two or three or four shipments (I cannot remember just how many), Mr. Yost began to prepare his first tank cars. He did this just as soon as it was demonstrated that the plan was a success. In answering the question 13 before, I said it was a month or six weeks or two months before the others began the business. It was somewhat longer than that. It was the latter part of that same year. I don't remember how soon or how late. I know he began as soon as we had made two or three or four trips.

Q. 17. How long have you been engaged in soliciting patents for others?

A. 17. Since the spring of 1868.

43 Q. 18. In the practice of that profession, has it been a part of your business to consider and weigh the force and extent of claims and the distinctions between mechanical devices?

(Question objected to generally by def'ts' solicitor.)

A. 18. It has necessarily so.

Q. 19. By stipulation on record, and put in evidence as Exhibit No. 1, defendants have admitted that they made and used, within the jurisdiction of this court, tank cars for transporting petroleum, of the following construction: "Two large, slightly conical tanks, made of wooden staves, and hooped, and of a diameter nearly equal to the width of the car, and of about four or five feet in height, secured to the platform of a 'flat car' or 'cattle car', by means of cleets nailed to the car, each tank being placed over one of the trucks, each of the said tanks having a man-hole on top and a faucet near the bottom, and a capacity of forty or more barrels." State whether or not, in your opinion, describes the invention claimed in the first two claims of the letters patent under which this suit is brought?

(Question objected to.)

A. 19. It does, as I understand it, necessarily.

Cross-examination by Mr. SHERMAN for defendants:

X Q. 20. Before tank cars were used in the transportation of petroleum, how long had you been engaged in shipping oil?

X A. 20. Three years, more or less.

X Q. 21. Where were you engaged in shipping oil during that time?

X A. 21. From Funkville and Furr Farm to Pittsburgh. I was
44 engaged as a member of the firm of Densmore Brothers. The firm was composed of James Densmore, William Densmore, Amos Densmore, Joel Densmore, jr., Emmet Densmore, and Joshua Douglass.

Q. 22. When did you become a member of the firm of Watson, Densmore and Company?

A. 22. Sometime in the spring or summer of 1864 the firm of Densmore Brothers was dissolved. Some time a little previous to that Mr. Daniel T. Watson, then of Saint Paul, Minnesota, and I were in a separate business, under the name of Watson and Densmore. It was found to the interest of that business for Mr. Watson to remove to Oil Creek, which he did. The firm and business of Watson and Densmore continued. We engaged in a refinery, made and shipped refined oil West in small quantities. It was while engaged in that business that he and I determined to try the experiment of shipping crude petroleum to New York by the new invention. Our first shipments by tank cars were made by Watson and Densmore in the months of May, June, July, and August, of 1865. Some time subsequently, I do not remember how long, my brother Emmett and Mr. Clinton Roudebush became members of the firm, and the name was changed to Clint. Roudebush & Company. Some little time after that, my brother William and my brother Amos joined the business, and the name of Clint. Roudebush
45 was continued. Sometime afterwards (I do not remember how long) I bought out the interests of Mr. Roudebush and my brother Emmitt, and the name of the firm was changed to Watson, Densmore and Company, that firm being composed of Daniel T. Watson, James Densmore, William Densmore, and Amos Densmore. That firm and business continued to the close or latter part of 1867.

X Q. 23. What did Daniel T. Watson have to do with aiding you to reduce to practice this mode of transporting petroleum as you have stated in your answer to the sixth question of your direct examination?

X A. 23. Mr. Daniel T. Watson and myself were in partnership in all business in which either of us was engaged at that time. I proposed trying the experiment, and asked him if he wanted to join or wanted the firm of Watson and Densmore to try the experiment. He answered that he did. He was occupying the position of home partner, so to speak. Our headquarters were at Miller's farm; we lived there and lived together. He stayed at home and attended to the while I did the running and attended to the business away from home. When Mr. Watson had determined the firm should do this business, I committed to his superintendence the whole business of getting the lumber, hiring the men, making the staves and tanks, mounting the tanks upon the cars, buying the petroleum and loading, and building the cars, while I procured the cars, got them sent to Miller farm, instructed him
46 how my brother, Mr. Amos Densmore, and I wanted the cars made, and went to New York, sold the petroleum, and sent the cars back to be again loaded and shipped.

X Q. 24. Where was your brother Amos at this time?

X A. 24. Principally at his home in the township of Woodcock, in this county, about six and a half miles from here, as I now remember it.

X Q. 25. At whose suggestion in the first place were these tanks placed upon the cars—your own, your brother Amos' or Mr. Watson'?

X A. 25. Mr. Watson had nothing to do with it other than to follow instructions. My brother Amos was the first to suggest the idea of carrying petroleum in the railway car itself instead in a package to be put on to the car and to be put off. And the particular plan of making the tanks in just the form they were made and placing them on the cars as they were placed, and making the tank-cars as they were made was mine.

X Q. 26. And the first tank-car which was made and successfully used was built under your supervision and according to your instructions, was it not?

X A. 26. It was in the manner as I have described it.

X Q. 27. When was the Oil Tank Company, spoken of in your direct examination, formed, and of whom was it composed, and what interest did you have in that company?

X A. 27. As I now remember, some time in the late spring or
47 early summer of 1866. I do not know all the members of that company. George W. N. Yost and myself were the organizers. It was organized on the plan of a stock company. Mr. Yost was the president. Mr. H. F. Sweetser, then superintendent of the Oil Creek Railway, was a stockholder. Mr. J. J. Shryock, vice-president of Atlantic and G. W. R. R., and some officer of the Erie Railway Co., was a stockholder, and a half dozen other gentlemen, railway officials and others, were stockholders. Watson and Densmore were allotted and owned one-fifth of the stock of the Oil Tank Company.

X Q. 28. How long was this Oil Tank Company in existence and how many tank cars did it use?

X A. 28. If I remember rightly, its property was sold out and proceeds divided about September, 1867. It was stipulated at its organization to have two hundred tank-cars. I do not know how many it made. Some twenty to twenty-five were burned up, and when its property was sold it had two hundred and nine.

X Q. 29. Were all the tank-cars which were used by this Oil Tank Company in 1866 and 1867, during its existence, made according to the specifications of the letters patent at issue in this case or upon which this suit is founded? If not, state wherein they differed from the patent.

X A. 29. In one sense they all were and in one sense none of them
were. The patent has four claims, two of the claims referring
48 simply to the combination of tanks with railway cars, and two of the claims referring simply to the mere fastenings by which the tanks were attached to the cars and to other special details. All of the tank-cars, in the essential features, were precisely like that described in the patent, but none of them were combined by the special fastening described in the patent, that is, none of the tank-cars of the Oil Tank Company were made with all the fastenings described in the patent.

X Q. 30. What fastenings were used on the Oil Tank Company cars spoken of?

X A. 30. The Oil Tank Company tank-cars were made by setting a large tank over each truck of a car on the platform and setting against each tank long circular segments or cleats of wood spiked or bolted to the platform of the car, and on many or most of the cars, or some of them at least, brace cleats ending against the circular cleats and extending

out in radial lines from the tank to the corners of the car, and between the tanks on a car, were also spiked to the platform of a car.

X Q. 31. Were the tank-cars used by Watson, Densmore and Company constructed in the manner just described?

X A. 31. If I remember rightly, many of them were. I do not know how many; I do not know but most of them were, and in addition we had extra fastenings; we had a square frame and busts, as shown in the patent.

49 X Q. 32. You have stated in your direct examination that during the first seven months of the existence of the Oil Tank Company a dividend of about ninety-three thousand dollars was declared. You may state what percentage of that sum was profit derived from the use of tank cars.

X A. 32. One hundred per cent. Every dollar of it.

X Q. 33. Was not that company during this period engaged in buying and selling oil in addition to transporting it?

X A. 33. It was not. It was particularly stipulated in one of its articles of organization that it was not to engage in anything but transportation.

(The last sentence of answer objected to by defendant.)

X Q. 34. About what time did Messrs. Yost & Doan commence using tank-cars as you have stated in your direct examination?

X A. 34. I first stated from six weeks to two months after we began to ship, which was in May or June, 1865; but I didn't mean just that; my words didn't convey just what I meant. I meant in six weeks to two months after we had made shipments enough to demonstrate the success of the invention. But the more I dwell upon it in my memory the more it comes to me that it was several months later than that; in the fall of 1865 or winter of 1865 and 1866.

Parties adjourned, by consent, to January 22nd, 1874, to meet at 8.30 a. m.

50 And now, January 22nd, 1874, both parties being present, the cross-examination of the witness JAMES DENSMORE is continued.

X Q. 35. How many tanks did Yost and Doan employ, and from what railway companies did they obtain them, if you know?

X A. 35. I do not know exactly how many, but about one hundred, and the cars were obtained from the Erie and the Atlantic and G. W. Railway Companies, but more from the Atlantic than the Erie. The number I only know from hearsay and not from personal knowledge.

X Q. 36. What kind of cars did they use, flat or stock cars?

X A. 36. Both; but mostly flat cars. In their use of stock cars they I think stripped the racks off mostly, leaving the end racks on, and some parts of the sides.

X Q. 37. How were these tank cars used by Yost and Doan constru'ed as to the fastenings of the tanks?

X A. 37. If I remember rightly a few of the very first they made the fastenings were like ours, those shown in the patent. But they soon abandoned the use of the bolts and frame work and retained nothing but the bolt and cleats.

X Q. 38. Does your last answer refer to the fastenings of the tanks on the flat cars, or the rack cars, or both?

X A. 38. I don't remember the special details so as to be positive, but I think mostly to the flat cars. However, practically they

51 reduced such stock cars as they used to flat cars before they made them into tank cars.

X Q. 39. Did you ever personally examine the tank cars used by the Cleveland Tank Company, or the tank cars used by the defendants in this suit? If so, state how the tanks on those cars were fastened.

X A. 39. As I now remember it, I did so examine the tank cars used by these defendants. The railway company refused to allow the rack cars to be defaced, and these defendants were obliged to have the tanks set up within the rack cars, and they were made so large as to rest against the sides of the racks which served for cleats on three sides, but as I now remember there were cleats or braces on the other sides. I think they used rack cars altogether. The railway company would not let them have their flat cars because they needed them for their own use for dirt and timber, and so compelled them to take rack cars and compelled the coopers to build the racks inside the rack cars.

X Q. 40. Tanks in and of themselves are not a new thing, are they?

X A. 40. Not at al'. They are as old as history for aught I know. But the combination of large tanks with railway cars so that the tanks shall be practically the body of the car and part and parcel of the car was new at the time we made it, so far as I know and believe.

(Last sentence objected to by defendants.)

X Q. 41. Have you any personal knowledge as to the cost of returning empty barrels from New York to Oil Creek?

52 X A. 41. Not any from the whole distance. I have from Corry down, which is necessarily part of the line from New York to Oil Creek. The cost was from Corry to Oil Creek sixteen cents each empty barrel.

X Q. 42. Are you a mechanic by profession?

X A. 42. I profess to have a knowledge somewhat of the science of mechanics. I was educated an artisan in my youth, but have not worked at it since my youth. My father is a universal mechanic and I have worked in shops with him at wood-turning, iron-turning, machine making and the like.

X Q. 43. Have you had any practical experience as a mechanic other than that mentioned in your last answer?

X A. 43. I have at various times of my life. I have been engaged in business where I employed mechanics, and I have at times assisted them and worked with them with my own hands.

X Q. 44. Have you any personal knowledge as to the difference in the cost of returning empty barrels from New York and empty tank cars?

X A. 44. None of the whole distance, but all cars from New York and all barrels from New York to Oil Creek by railway at that time necessarily went over the Oil Creek Railway; that is, what we call to upper Oil Creek, and on that portion of the line I have personal knowledge that the price of carrying an empty barrel was sixteen cents, and

53 the price of transporting an empty tank car holding eighty-five to one hundred barrelfulls was eight dollars.

Redirect examination by plaintiff's attorney:

Q. 45. In answer to X Question 25 you said that your brother Amos "was the first to suggest the idea of carry' petroleum in the railway car itself, instead of a package to be put on to the car and to be put off." Give, if you can, more particularly, the idea suggested by your brother.

A. 45. My brother had been the first to invent and carry out the plan of transporting petroleum in a tight boat on the river to Pittsburg, dispensing with the use of barrels or packages, and he frequently suggested

the same general plan could be carried out on railway cars. We frequently talked together and discussed details of how it should be done; he more generally suggesting making a tight wooden or iron box, that should cover the whole platform of the car, while I thought that separate tanks or boxes, one on each end of the car, might be better; we discussed these things quite frequently, and the probability of one plan being better than another; the thought was broached that if the box covered the whole car the twisting of the car platform in going around curves and the like might strain a long box and make it leak. As the result of these discussions I determined to make two compartments or boxes or tanks, one on each end of the car, and he assented, and in making the tanks that were made, the special details I had to devise because he was not present.

54 Q. 46. In your opinion, as a solicitor of patents, did the facts of a conception and a reduction to practice of this invention constitute you and your brother Amos joint inventors and proper parties to a joint application for a patent?

(Question objected to by defendants.)

A. 46. They did; at the time this was done I was utterly ignorant of everything pertaining to patents and patent law, and didn't think of applying for a patent till others advised me so to do, but since that time I have had several years' practice before the Patent Office, and had considerable experience in matters of patents, and have studied patent laws considerably, and I think I have some knowledge of the subject, and from that knowledge I think we could have done no other way rightfully than to have made a joint application.

Q. 47. If tanks of the shape used by you were old in themselves, and if ordinary railway freight cars were also old in themselves at the date of your invention, what, in your opinion, was the chief patentable feature in the tank-car invented by you and your brother Amos?

(Question objected to by defendants.)

A. 47. As I understand the patent law, the combination of any two or more well known devices into a new device which produces a new and useful result is patentable, and the combination of a tank with a railway car, making the tank an integral part of the car, so that

55 the combination makes a tank-car, whereby petroleum or other volatile liquid substances can be poured into it, transported and drawn from it without the use of movable barrels or other packages, is a new combination and produces a new and useful result, and is therefore the proper subject for a patent, however simple it may appear after having been done.

Q. 48. State whether or not the "fastenings," frame, and bolts and cleats described in your patents, and the fastenings which defendants used as stated in your cross-examination, were equivalent to each other within the meaning of the patent law.

(Question objected to by defendant.)

A. 48. I would think not; the defendants used a part of the fastening I used; they didn't use the other part; and in relation to that part of the patent referring to the fastenings they didn't infringe the patent, as I understand it.

Recross-examination:

X Q. 49. Then the idea of using two tanks on a car was suggested by you, and by you and D. T. Watson finally reduced to practice.

X A. 49. As I now remember it, the first suggestion of two compartments or boxes or tanks, as I before said, instead of one long one, was

first suggested by myself, but it was in a discussion with my brother Amos in regard to the best devices for carrying out his previous suggestion of making an oil car. The business of making a tank-car and shipping petroleum in it was first done, as I said before, by Watson and Densmore.

56 Redirect examination:

Q. 50. Is there any substantial difference in the object and result, whether you combine the tanks and cars by means of either device shown in the patent, or by the device used by defendants?

(Objected to by defendants as leading, and also objected to generally.)

A. 51. So far as the result of a tank car is concerned there is no difference, and so far as the combination of tanks and car into a tank-car is concerned there is no difference, but there is a substantial difference in the devices by which fastenings are made; they dispensed with several things which I used as described in the patent, and made the fastenings simpler and cheaper.

JAMES DENSMORE.

Signed in my presence.
THOMAS RODDY,
Examiner.

Examination taken, reduced to writing, and by the witness subscribed and affirmed to this 21 and 22 day of January, A. D. 1874.

THOMAS RODDY,
Examiner.

DANIEL T. WATSON, being produced, sworn and examined on the part of the plaintiffs, deposeth as follows:

Q. 1. What is your name, age, residence and occupation?

57 A. 1. My name is Daniel T. Watson; I reside in Pleasantville, Pennsylvania; I lack a few days of being sixty-eight years old; I am an oil producer by profession.

Q. 2. Were you present and did you hear most of the direct examination of Mr. James Densmore in this case yesterday, and are you the Daniel T. Watson referred to by him?

A. 2. I was present yesterday and heard his testimony, and I am the Daniel T. Watson whom he referred to.

Q. 3. When did you first enter upon the oil business?

A. 3. In the year 1864. The first I did in the oil business was shipping refined oil to Minnesota from Oil Creek. We commenced shipping oil east to New York from Oil Creek in the year 1865.

Q. 4. What part of your time from the time you began shipping from Oil Creek up to the year 1868 were you on the Oil Creek, and what were your opportunities for knowing the course of trade in producing and shipping oil?

A. 4. I spent most of the time from 1864 to 1868 on the creek, and was engaged in buying and shipping refined and crude petroleum for Watson and Densmore and other parties. Watson and Densmore were James Densmore and myself, and in company D. B. Dunham we shipped crude petroleum in barrels on commission for Mr. Yost and others.

Q. 5. How far does your recollection of the business relation between you and Mr. James Densmore coincide with or differ from the

58 statements made by Mr. James Densmore in his deposition that you heard yesterday?

A. 5. I do not know that there is any discrepancy at all. I think the statements he made were entirely correct.

Q. 6. During the time that you shipped crude petroleum in barrels, what was the average price of barrels on Oil Creek, what was their freight when loaded to New York, and what was their freight back from New York, and what the price of empty barrels in New York?

A. 6. I think as near as I can remember about three dollars, sometimes a little above and sometimes a little below that. As we had nothing to do with paying the freights on barrels to New York, I do not know how much was the charge. We shipped on commission for other parties. We paid freight on the empty barrels returned from New York to Oil Creek; the price was seventy-five cents per barrel usually. I don't know what empties were worth in New York. After that, a year after (I am now speaking of 1864), in 1865, we did buy empty oil barrels in New York; we paid from sixty to eighty cents per barrel, oftener seventy-five.

Q. 7. When did you first see a tank-car for transporting petroleum?

A. 7. The last of May, in the year 1865.

Q. 8. Up to that time what was the universal mode of transporting petroleum by railways?

A. 8. In barrels and casks.

59 Q. 9. Who, if you know, made that first tank-car that you saw in May, 1865?

A. 9. In the winter of 1864 and 1865 Mr. James Densmore and myself got up eight tanks to be attached to four platform cars for carrying oil in bulk. Those were the first I ever saw or ever heard of.

Q. 10. How were those tank-cars made?

A. 10. Four of them were made at Miller farm out of wooden staves hooped with iron, round in form like tanks, capable of holding about forty-five barrels, forty-two gallons to the barrel. Four of them were made of iron and manufactured in New York, and were of the general shape and size of the wooden ones. They were attached to a common platform car used for carrying lumber and all such things. They were placed at each end of the car, directly over the trucks, two tanks to a car. They were fastened by iron rods fastened through a frame-work from the top of the tank down through the platform of the car, and the nut on the lower end of rod like those shown in the patent.

Q. 11. About how many tank-cars were used by you and Mr. Densmore and those interested with you during the years 1866 and 1867?

A. 11. I think Watson, Densmore and Company increased the number from time to time till we had seventy-five (75) cars, tank cars.

Q. 12. During the years 1866 and 1867 have you any recollection, and if so, what, concerning a large dividend on the use of a consider-

60 able number of tank-cars?

A. 12. I recollect the Oil Tank Company made a large dividend. Watson and Densmore got a part of it, for they owned some stock in that company. There was a dividend of something more *the* ninety-odd thousand dollars; I don't remember exactly how much. The number of cars used by the company declaring the dividend at that time was between a hundred and fifty and two hundred cars. As I remember it the time covered by that dividend was somewhat about seven months.

Q. 13. Name some of the principal stockholders of that company, and state the nature and object of the company and whether or not the Oil Tank Company bought and sold oil as a company or whether or not they restricted themselves as a company to the shipment of oil.

(That part of the question which relates to nature and object of the company objected to by defendants.)

A. 13. George W. N. Yost was a stockholder. (He was engaged in shipping oil largely in barrels up to that time.) Watson Densmore and Company held some of the stock. Mr. Sweetser, superintendent of the Oil Creek Railway, and others were stockholders. The company was formed to ship oil for other parties and was not allowed to buy and ship oil in the name of the company, and did not.

61 Q. 14. Was or was not this dividend declared on the business of the Oil Tank Company as shippers only?

A. 14. I so understood it.

Q. 15. How soon after you shipped the first tank-car of petroleum (in May, 1865) did other parties ship similar tank-cars?

A. 15. About eight months, as I remember it now. The parties were Mr. Yost and Doan first; they put on a line to Cleveland; none were shipped to New York that way until some months afterwards.

Q. 16. State what percentage of crude oil that was carried by railways was carried in barrels prior to May, 1865.

A. 16. All was carried in barrels, casks, and hogsheads.

Q. 17. What proportion was so carried in barrels at the beginning of 1868?

A. 17. A very small proportion was carried in barrels—not one twentieth.

Q. 18. How long, if you know, did the tank-cars of the construction you have described continue to carry the greatest portion of crude oil that was transported by railway?

A. 18. I should think two years or two and a half years.

Q. 19. How large a number of those tank-cars came into use?

A. 19. I judge there were fifteen hundred at one time in use.

Q. 20. State whether or not all of those fifteen hundred tank-cars were substantially like or different from the first tank-car made

62 by Mr. Densmore.

(Question objected to.)

A. 20. They varied a little in capacity and size; otherwise very similar.

Q. 21. Please state in detail the advantages, if any, which you found in shipping oil by tank-cars over shipping it in loose packages, such as barrels—I mean during the years 1866 and '7—in respect to the advantage, if any, in point of freight, in point of labor-saving in loading and emptying the cars, in cooperage, in cost of barrels, and in return freights on the empty barrels and the empty tank-cars.

A. 21. We found a great saving in freight; we could carry more barrels of oil in the tanks, as we could save carrying one hundred pounds of wood that the barrel weighed; we could carry that in oil, and that would average sixty hundred pounds each car; sixty barrels of oil in barrels was the common car-load, and we carried in tank-cars from eighty-five to ninety barrels; we carried the last-mentioned quantity of oil for the same price as was paid for the former; that is, at first we did; afterward the railway companies charged us more freight; after they charged us more freight we had the decided advantage then, as we saved largely in leakage and the expense of handling the oil on the creek and in New York; at one time they charged us the same

63 as they did in barrels, but usually we shipped for less than they charged for barrels, and we saved on returning tanks over returning barrels; it cost to return a tank-car containing from eighty-five to ninety barrels about thirty-three dollars from New York to Oil Creek,

while it would cost seventy-five cents per barrel for returning empty barrels from and to the same place. In shipping barrels each barrel had to be filled on the creek from the storage tank, which was considerable labor and wastage, more than there was in filling the car-tanks from the same storage tank; there would be an expense in loading the barrels on the car on the creek and coopering barrels on their return, and also in handling the oil in New York; there was much less expense in handling it when shipped in the car-tanks than there was when shipped in barrels; the leakage out of a tank-car load of oil was less than out of a car load of oil in barrels; the leakage per barrel of oil in a barrel shipped from Oil Creek to New York was from one per cent. to ten per cent., depending upon the condition of the barrels when shipped; the average leakage of good merchantable barrels was from two to three per cent.; the leakage from tanks was very small; it wouldn't average one per cent.

Cross-examination by defendants:

X Q. 22. Who paid the freight on the barrels of oil which you
64 shipped to New York in 1865, when you were shipping in barrels?

X A. 22. The consignee.

Q. 23. You have stated that the freight on empty barrels from New York to Oil Creek was usually seventy-five cents per barrel; was that the uniform freight during that year? If not, what was the variation in freights?

X A. 23. I have no recollection of its being any less or more than seventy-five cents per barrel.

X Q. 24. What other devices than the frame and rods you have described were used by you on your first cars for fastening the tanks to the cars, if any?

X A. 24. I do not remember that there was any other device used on the first cars that we built.

X Q. 25. When was the Oil Tank Company spoken of formed?

X A. 25. As I now recollect it, it was formed in the spring or early part of the summer of 1866.

X Q. 26. Had you anything to do actively with its management?

X A. 26. I had not.

X Q. 26½. Then what you have stated with reference to the source of this dividend of over ninety thousand dollars is not derived from any personal knowledge thereof?

X A. 26½. All I know about that dividend is that Watson, Densmore and Company received a dividend on the stock that they held in that company in proportion to the amount of stock they held.

65 X Q. 27. What is the average weight of an empty crude oil barrel?

X A. 27. About one hundred pounds.

Q. 28. What is the average weight of an empty tank such as was used by you on your tank cars, including the frame rods and other devices used in fastening the tank to the car?

X A. 28. I do not know what the weight was; we claimed that they (the tanks and their fixtures) did not weigh as much as the rack that covered the barrels on a rack car, and the railroad officials allowed our claim and charged no extra amount for the weight of the tanks and the fixtures.

(Last part of the sentence objected to.)

X Q. 29. What was the difference in the amount of freight per barrel on oil shipped in barrels and oil shipped in tanks, in 1865?

X A. 29. In 1865 they charged us for each tank car the price for carrying sixty barrels in barrels. I don't remember the amount, but I know we paid the same.

X Q. 30. How was it afterwards?

X A. 30. Afterwards, the latter part of that year, or the first part of the next year, they charged us seventy barrels per tank car.

D. T. WATSON.

Examination taken, reduced to writing, and signed in my presence and sworn to.

Jan'y 22, 1874.

THOMAS RODDY,
Examiner.

66 AMOS DENSMORE, being produced, sworn and examined upon the part of the plaintiffs, in answer to interrogatories, deposeth and saith:

Q. 1. What is your name, age, residence and occupation?

A. 1. My name is Amos Densmore; aged forty-nine years; residence, Meadville, Pennsylvania, and farmer by occupation.

Q. 2. Were you at one time engaged in the business of shipping petroleum; and, if so, during what time?

A. 2. From 1861 and 1862 I was so engaged, more or less, until 1867. At Sarr Farm, on Oil Creek, until 1864. Some time in 1866, I should think, I was interested in the shipment of crude petroleum from Oil Creek to New York, in tank cars.

Q. 3. When was the first shipment of petroleum made in tank cars?

A. 3. Some time in the summer of 1866; I don't remember the exact time.

Q. 4. Before the shipment of this tank car what was the only mode of transporting oil on railways in use to your knowledge?

A. 4. By barrels and casks.

Q. 5. After this shipment in tank cars to what extent did you and James Densmore and others united in interest use tank cars?

A. 5. As I remember it, from fifty to one hundred cars per month, sometimes.

67 Q. 6. Please state in detail the advantages shipment of oil in tank cars possessed over shipment in loose barrels or packages in the cars.

A. 6. First, the oil was more readily loaded on tank cars because it could be conveyed from storage tanks much more readily into the cars by pipes than into barrels, with the saving of loading the barrels on the cars. Secondly, eighty barrels of crude petroleum or other fluid weigh less than sixty barrels filled with oil, barrels and oil together, consequently costing less to transport the eighty barrels in the tank cars than sixty barrels in barrels. Third, the leakage proved to be far less by shipping by tank cars than when carried by barrels. The expense of keeping tanks on tank cars was very much less keeping in repair than coopering barrels to transport the same quantity of oil in barrels. This knowledge I obtained by general report and by personal observation. In regard to the tank cars I know from personal observation that the leakage was almost nothing, as I superintended the unloading of some hundreds of cars, in Jersey City, in 1866 and 1867.

Q. 7. What was the cost of returning an empty barrel from New York to Oil Creek, and what was the cost of returning a tank car that held about eighty barrels?

A. 7. I don't now recollect if I ever knew. I know from general principles that it would cost no more to return a tank car than a car without barrels.

(The last sentence objected to by def'ts.)

68 Q. 8. In the spring of 1870, how many tank cars composed of two conical tanks placed over the trucks and combined with a railway car, were in use? Give your best estimate.

A. 8. I only know from se'ing them on different roads, that there were a large number, from one to two thousand, I should think.

Q. 9. During the period of nearly four years, inclusive of the summer of 1866 and the spring of 1870 (basing your estimate on the number of trips per car made by the tank cars used in your interest), how many trips do you estimate to have been made by one thousand cars used by other parties during that period?

(Question objected to by defendant.)

A. 9. At least forty thousand car loads were so shipped by other parties.

Q. 10. Estimate, in dollars, the advantage you and your associates found in shipments by tank cars over shipment by barrels.

A. 10. I estimate the advantage at more than thirty dollars per car load. I think fifty dollars; but just how much, I don't know.

Q. 11. If, then, these defendants and other infringers have made forty thousand trips with such tank cars and have derived an advantage therefrom amounting to a sum per car per trip equal to one-third only of the lowest profit estimated by you, that is, ten dollars per car per trip, the amount of such saving would be how much?

69 A. 11. The amount would be four hundred thousand dollars.

Cross-examination by defendant's attorney:

X Q. 12. In stating the advantages of shipping in tank cars over shipments in barrels, you have said that you derived your knowledge of such advantages partly by general report and partly by personal observation; what part of that knowledge is derived from personal observation, and what part from general report?

A. 12. The advantage of loading oil into tank cars from storage tanks above filling oil barrel' from storage tanks and loading barrels into cars, I derived from personal observation and experience, having done all that work myself. The amount of leakage by shipment of oil in barrels I obtained more by general report than observation. Aside from this matter of leakage in barrels, my knowledge of the advantages that I have stated in my direct examination is derived from personal experience and direct observation.

X Q. 13. You have stated that "I know from general principles that it would cost no more to return a tank car than a car without barrels"; do you mean to say that it did not cost you anything to get your tank cars back again?

70 X A. 13. Some of the time it cost us nothing to return the tank cars; part of the time we were charged for the return of the cars, I don't recollect how much. I mean by the general observation, that it cost no more to return a tank car than a car without barrels; that a car mounted with such tanks as we put on would weigh no more than some rack cars, and were in fact regarded as empty cars.

X Q. 14. Is it not the fact that, from the latter part of the year 1865 down to the spring of 1870, the railway companies invariably charged freight for the return of these empty tank cars?

X A. 14. It is not the fact, as much of the time in 1866 and 1867 they

did not charge us for the return of such cars, according to the best of my recollection.

X Q. 15. Do you state this from personal knowledge of that fact, or from information derived from others?

X A. 16. I state it from information derived from my partners in that business rather than from an examination of the books.

X Q. 15. Who made the contracts for freights in your firm with the railroads?

X A. 16. James Densmore generally. I have heard D. T. Watson mention that he negotiated with Mr. Sweetser, general superintendent of the Oil Creek Railway, in regard to some matter of freight charges.

71 X Q. 18. You then have no personal knowledge of the rates of freight charged by the company or the payment of the same by your firm to the company for the shipment of oil?

X A. 18. I do not mean to say that.

X Q. 19. Is it not the fact that contracts for shipments of oil covered the transportation to New York and the return of the cars at a given rate of freight?

X A. 19. I made no contracts with the railroad companies myself, and don't just know what contracts were made, if any, in regard to return of empty tank cars. It might have been; I don't know whether it was the fact or not.

X Q. 20. Give the grounds of your statement as to the number of tank cars in use in the spring of 1870.

X A. 20. I know that the Oil Tank Company used a hundred or more cars in 1866 or 1867—I mean the Oil Tank Company in which Watson, Densmore and Company had an interest; and I know, from general observation from the show they made on the road, that there were many more cars used by other parties at that time, and I know from seeing cars on the Alleghany Valley Railroad, Philadelphia and Erie Railroad, and the Atlantic and Great Western Railroad, that there were a great many more cars used in 1870 than in 1867; so I concluded from that kind of observation that there must be from one to two thousand in use. I had no other means of knowledge.

72 X Q. 21. Upon what do you found the estimate you have made of forty thousand car loads being shipped by these defendants and other parties, aside from your company, during the four years from 1866 to 1870?

X A. 21. From the fact that Watson, Densmore and Company had cars loaded with petroleum taken to New York and returned oftentimes within two weeks, and almost always within a month; so I conclude that Watson, Densmore and Company's cars made at least fifteen trips each car a year; and as much of the oil shipped by other parties was taken a much less distance than to New York, I conclude their cars made at least fifteen trips in each year; but one thousand cars at ten trips in each year would make in four years forty thousand trips.

X Q. 22. Give the grounds for your estimate of the advantages derived from the use of tank cars over barrels in shipping oil, which you place at thirty dollars per tank car.

X A. 22. Well, one of the grounds of the estimate consists in the fact that eighty barrels of oil shipped in tank cars weigh less than sixty barrels shipped in barrels, including packages; and another reason for the estimate consists in that sixty barrels of oil shipped in barrels to New York at two and a half dollars per barrel, the price sometimes

73 charged, comes to a hundred and fifty dollars. Eighty barrels at a hundred and fifty dollars is less than two dollars per barrel, and

at this estimate the saving in a car load would be between forty and fifty dollars; and another reason consists in the fact that the cooperage on sixty barrels would amount to at least twenty cents per barrel for each time they were taken to New York and returned, so I have been informed by persons who have made a special business in shipping by barrels. Then the leakage in shipping by barrels to New York averaged one to two gallons in each barrel, so I have been informed by persons who have made a business in shipping by barrels, and as the leakage in shipping by tank cars, as I know of my own experience, is almost nothing, so the gain in this particular would amount to more than one gallon in each barrel shipped, and as oil sells in New York or other markets where sent is worth from five to twenty-five cents per gallon, this would make a difference of five to fifteen dollars per car load.

(The answer, so far as relates to what is based upon information, objected to by defendants.)

X Q. 23. During these four years, was the freight, which you have stated to be two dollars and a half per barrel, the uniform rate to New York?

X A. 23. It was not. In 1866 and 1867—'67 more particularly—the price charged per car-load of twenty-five thousand (25,000) pounds shipped from Oil Creek to New York, varied from a hundred and forty
74 to two hundred and seventy dollars per car load, as I happened to know, as I paid the freight bills, and which I have now. In 1868, 1869, and 1870, I know nothing about the freights charged.

X Q. 24. The freights to points nearer than New York were proportionately less, were they not?

X A. 24. I have no knowledge of that, one way or the other, but I presume they were; but I have no knowledge of it at all.

X Q. 25. What proportion of these 40,000 trips of tank cars were made by the defendants to this suit?

X A. 25. I don't know.

X Q. 26. This estimate of the number of car-loads shipped in tank-cars which you place at 40,000, depends largely upon the fact that your estimate as to the number of tank cars in use by other parties than your company during those four years is a true one, does it not?

X A. 26. It does, with this exception, that I made considerable margin in estimating the number of trips, so that it would fall considerably within the actual number, if there were a thousand in use.

Re-examined in chief:

Q. 27. How strong is your belief in the correctness of the information relating to freights and leakage, upon which you have based the estimate just made?

75 (Objected to by def'ts.)

A. 27. I am thoroughly convinced that it is true.

AMOS DENSMORE.

Examination taken, reduced to writing, and by the witness subscribed and sworn to, this 22d January, A. D. 1874.

THOMAS RODDY, *Examiner.*

Complainants' Exhibit No. 1.

Circuit court of the United States, northern district of Ohio. In equity.

JAMES DENSMORE ET AL.
vs.
WILLIAM C. SCHOFIELD ET AL.

Stipulations in behalf of complainants.

Defendants admit (waiving all further or other proof thereof, but subject to all exception for want of relevancy or admissibility) that reissued letters patent of the United States were granted and delivered to James and Amos Densmore, complainants, on the 29th day of May, 1866, and numbered 2261, for an improved tank-car for transporting petroleum in bulk, and that the undivided one-fifth of said letters patent was assigned to G. W. N. Yost, one of the complainants, on the 28th day of June, 1866, and that said assignment was duly recorded
76 in the United States Patent Office, and that said reissued letters patent and assignment, or certified copies thereof, are now in evidence, and may be read as evidence at the hearing in this cause.

II. That the defendants have made and used in the city of Cleveland and other places within the jurisdiction of this court, on and since the 28th day of June, 1866, and are now so using a large number of tank-cars (their number, and the value of their uses in case a decree should be rendered for complainants, to be ascertained on reference after hearing), for transporting petroleum in bulk, of the following construction, viz: Two large, slightly conical tanks, made of wooden staves, hooked, and of a diameter nearly equal to the width of the car, and of about four or five feet in height, secured to the platform of a "flat car," or "cattle car," by means of cleats nailed to the car, each tank being placed over one of the trucks, each of the said cars having a man-hole on top and a faucet near the bottom, and a capacity of forty or more barrels.

III. This stipulation shall not have the effect of excluding any other evidence on the same points.

R. P. RANNEY &
WILLEY, CAREY & TERRELL,
Solicitors for Defendants.
JO. C. CLAYTON, *Pro Orat.*

77 NORTHERN DISTRICT OF OHIO, *ss:*

It is hereby certified that the foregoing is a true copy of certain evidence by stipulation filed in the within-entitled cause in the clerk's office of the circuit court of the United States within and for the district aforesaid.

Witness my official signature and the seal of said court, at Cleveland, in said district, this 10th day of January, A. D. 1874.

[SEAL.]

EARL BILL, *Clerk*,
By CHAS. H. BILL,
Deputy Clerk.

Depositions for def'ts.

U. S. circuit court, N. D. of Ohio.

DENSMORE ET AL.
vs.
SCHOFIELD ET AL.

Addison Hills, being sworn, deposes and says that he has been general freight agent on the Lake Shore and Southern Michigan R. Way and its predecessors for about twenty years. That all this time he has been familiar with the practice and usage in railways as to loading, and that it has always been their practice or usage to place or distribute loads so that they should rest, as far as possible, over the trucks.

ADDISON HILLS.

78 Stipulated that the above may be taken as a deposition in this case for the defendants, subject to the same exceptions as made in the depositions of McGregor and Andrews.

March 13, '76.

JOHN COON, *of Counsel for Pl'ff.*
WILLEY, TERRELL & SHERMAN,
Sol's for Def'ts.

Also E. S. Flint deposes and says that he is superintendent of the Cleveland, Columbus, Cincinnati and Indianapolis Railway Company, and been acquainted with the usage as to loading freight cars thereon and on other railroads for twenty years last past, during which period it has been the custom and usage, when the load for a car would admit of it, to load it on over the trucks as far as practicable.

E. S. FLINT.

Same stipulation as to this as made as to statement of A. Hills.
March 13, '76.

JOHN COON, *of Counsel for Pl'ff.*
WILLEY, TERRELL & SHERMAN,
Sol's for Def'ts.

Circuit court of the United States within and for the northern district of Ohio.

THE STATE OF OHIO,
County, ss :

JAMES DENSMORE ET AL., PLAINTIFF,
against
WILLIAM SCHOFIELD, DEFENDANT.

79 The will take notice that on Thursday, the second day of March, A. D. 1876, the above-named will take the depositions of A. M. McGregor and John Andrews, sundry witnesses, to be used as evidence on the trial of the above-entitled cause, at the office of , in the city of Cleveland, county of Cuyahoga, and State of Ohio, between the hours of eight o'clock a. m. and six o'clock p. m. of said day, and that the taking of the same will be adjourned from day to day, between the same hours, until they are completed.

Attorney for .

I acknowledge service of the above notice by copy this day of , 187 .

Attorney for .

Caption.

Depositions taken before me, John Biggs, a notary public within and for the county of Cuyahoga, in the State of Ohio, pursuant to the annexed notice, at the time and place therein specified, to be read in evidence on behalf of the defendant in an action pending in the circuit court of the United States for the northern district of Ohio, in which James Densmore et al. plaintiffs and William Schofield et al. defendants.

Present, John Coon, on behalf of the plaintiff, and Geo. Willey, on behalf of the defendant.

A. M. McGREGOR, of lawful age, being by me first duly sworn as hereto certified, deposes and says as follows:

By GEO. WILLEY:

1st. Question. State your name, age, occupation, and place
80 of residence.

Answer. My name is A. M. McGregor; I am thirty-three years of age; I am in the employ of the Standard Oil Co., as purchasing ag't; and I reside in Cleveland, Ohio.

2d. Question. When did you first go into the employ of the Standard Oil Company?

A. I have been in that business since April, 1866. I at that time went into the employ of some of the defendants in this suit, who, with others, were afterwards merged into the Standard Oil Co. in 1872.

Q. What kind of cars in April, 1866, were the defendants using, and from that time on?

A. I cannot say positively when the Cleveland Tank Line Co. were organized; it was early in 1866; and these defendants owned and used no tank-cars until the organization and construction of the tank-cars built by the Cleveland Tank-car Line Co.

Q. What kind of tanks did they then use?

A. They were wooden tanks, about eight feet in diameter and six feet high, bound with iron, built with staves, and heads outside of the cars, and put into cattle-cars, after having first taken out one end of the car, through which both tanks were slipped into the car, one being placed in each end of the car. The diameter of the tanks were equal to the width
of the car, so that the tanks rested against both sides of the cars,
81 and were fastened on the other two sides by cleats or strips of wood spiked to the bottom of the car; that is the only way in which they are fastened into the car. The cattle-cars are cars with a substantial frame and tight roof, with slats on the sides, and a platform-car is merely a bare bed or floor of a car, with no superstructure whatever.

Q. State whether or not these tanks could be loaded on to the cars and removed on to the cattle cars without injury to the cattle cars.

A. In preparing to load the tanks on to the cars the ends were carefully taken out by mechanics, and done in such a manner as to cause no injury to the car whatever.

Q. State whether they could be removed in the same way and the ends always being placed back as found at the time of putting the tanks in if at any time it was desirable to take the tanks out?

A. The ends could be taken out and the tanks removed without injury to the car.

Q. Who furnished and owned the cars that were used?

Q. The Atlantic & Great Western R. R. Co.

Q. You may state whether or not the account you have just now given of these cars applies to all the tank cars (that general description) that were built and used by the defendants until the time that they discontinued their use.

82 A. It does; to my certain knowledge they never had any tanks in anything but cattle cars furnished by A. & G. W. R. R. Co.

Q. State at what time this description of tanks and cars was abandoned by the defendants, and why.

A. During the year 1871 their use was discontinued because of the large percentage of leakage, and their consequent liability to be burned up; and in case of accident on the railroad, if a tank was thrown off a car and it was destroyed, a fire was almost certain to result from the accident. A single iron tank built in boiler shape, and nearly as long as a car, and placed horizontally on the car, was substituted then.

Q. State whether they use that description of tank down to the present time?

A. That kind of tank car is still in use, and is giving universal satisfaction because of being tight, little or no leakage, and the liabilities to fire are less, and in case of accident the tank is of sufficient strength to even be thrown off a car without injury.

Q. State whether or not tanks of the kind described in the defendants' patent have gone into disuse in the carrying of petroleum generally.

A. So far as I know they have.

Q. In loading freight cars what has always been the practice
83 and custom in reference to loading over the trucks where the weight can be thus distributed?

A. It is the universal custom so far as is possible to place the weight over the trucks.

Q. State whether the two tanks such as you have described would constitute a load for a car when filled.

A. They would; the contents of the two tanks would weigh anywhere from ten to twelve tons, which is an ordinary car load.

NOTE.—It is understood and admitted by counsel that this testimony being taken out of rule is subject to exception upon all grounds, and with the further understanding that an application is to be made by the defendants to the court for leave to take further testimony, and if that application is granted this testimony shall be used subject only to exception as to competency, but subject to no exception on account of its having been taken out of rule subject as above, but not subject to exception because it was taken out of rule.

Cross-examined by Mr. COON:

Q. Were there not other cars than those which had the cattle bodies or frames for confining cattle used from 1866 to 1871 in transporting petroleum to the refineries of the defendants?

84 A. There was; they used to buy a good deal of oil from Doan, and many of his cars, I think, was platform cars with tanks on them.

Q. Who owned the cars that were used by these defendants, and who fitted them up with tanks?

A. The A. & G. W. R. R. Co. owned the cars, and they were fitted up by Henry James, Katell & Judd, carpenters and builders, who manufactured and built the tanks.

Q. At whose expense were they fitted up; was not it done at the expense of the defendants?

A. Yes, sir.

Q. And the cars were operated, were they not, by the defendants and for their business?

A. Yes, sir.

Q. In saying that those wooden tank cars such as are described in the plaintiffs' patent have gone into disuse, you mean, do you not, that they have gone into disuse in transporting petroleum to the Cleveland refineries?

A. That is as far as my positive knowledge extends.

Redirect ex.:

Q. What observation have you had as to the kind of cars used in the oil regions at Oil City and through the oil region there?

85 A. I have been very little in the oil regions except in Oil City during the year 1875. I visited Oil City on several different occasions two or three days at a time each time, and while there have never seen any wooden tanks in use on platform-cars during the year 1875. I have seen in use only the cylinder iron tank placed horizontally on the bed of the car.

Recross-ex.:

Q. The wooden tank cars, prior to the introduction of the boiler tank cars which you have described, were a great improvement, were they not, on former methods in use in transporting crude petroleum?

A. My connection and experience in the business commencing only in April, 1866, I have no knowledge of the previous conditions of the business whatever.

Q. It was a time, was it not, from 1866 to 1871, that these wooden tank cars were very extensively used?

A. Yes, sir.

(Signed) A. M. McGREGOR,

By consent,

Per JOHN BIGGS.

JOHN ANDREWS, of lawful age, being by me first duly sworn as hereto certified, deposes and says as follows:

By Mr. WILLEY:

Q. State your name, age, occupation, and place of residence.

A. My name is John Andrews; I am fifty years of age; I have

86 no business at present, and I reside in Cleveland, Ohio.

Q. How long were you connected with the defendants, and afterward with the Standard Oil Co.?

A. I have been connected with them since 1863; from 1863 to 1865, building refinery in Cleveland; from 1865 to 1872 in the capacity of purchasing ag't in the oil regions; my family lived here, but I had my office there and was doing business there.

Q. Give an account of the cars used by the defendants for shipping oil.

A. In 1865 and the greater part of 1866, it was shipped in barrels, after which it was shipped in tank cars and barrels promiscuously, and finally we used tank cars altogether.

Q. In 1865 what were or had been in use in the shape of larger vessels than barrels?

A. In the upper regions none; in the principal oil region they used

large barrels or hogsheads; there was none came to Cleveland; they went east; large barrels or hogsheads from 60 to 200 or more gallons each.

Q. How much more?

A. I could not say.

Q. Well, these hogsheads would be loaded on the cars?

87 A. Loaded on the cars, on the coal cars, frequently, or platform or coal cars sometimes with boards running around the sides and in some cases cleats of wood only on the bed of the car to prevent them rolling off.

Q. And those hogsheads would be brought back?

A. Yes, sir; brought back for refilling.

Q. How many of those hogsheads would be loaded on a platform-car?

A. It depends on the size, sometimes 12 or 15 of them; they put on enough until they considered there was a good load of ten or twelve tons.

Q. To what extent was this practiced at the time you went there in 1865?

A. Not very extensively; if my memory serves me right, I think Woods and Wright was the principal men that done it; after a while they came into general disuse, on account of the bulk'er packages being hard to handle at the wells where we had to fill them and take them over to the cars.

Q. About when did the defendants begin to use tanks on cars; of what description, and give an account of them?

A. I am not positive as to dates; but think in the latter part of 1866, they commenced to use tank cars with bed tanks in each holding about 40 to 45 barrels each, with 43 gallons to the barrel inserted into the car by taking out one end before putting the tanks in, and *and* nailing

88 cleats at each end and the *the* sides of the car to protect the other side of the tanks, and replacing the ends in again firmly; then the tank was ready for use.

Q. State whether those were the only kind.

A. They were the only kind to my knowledge that the company ever had.

Q. Do you know who owned the cars?

A. The A. & G. W. R. R. Co.

Q. State whether these tanks could be removed from the cattle cars.

A. They could be removed in the same way as put in, by taking out one end, after which, by being replaced again by good mechanics, it was as good as ever.

Q. State, if you know by observation, what was the practice of railways for the year prior to 1865, and for how long a time to distribute the weight so that it should be as much of it over the trucks as possible.

A. It was an universal practice ever since I have had any railroad connections for 30 years, if it was possible to do so; in some loads you cannot do it.

Q. Do you know how the tops of these tanks were constructed, the covers of them?

89 A. The man-hole was about 16 to 18 inches in diameter, with a projection above the top of the tank about 4 or 5 inches; around which projection we made a groove capable of receiving a half-inch rope, which we placed around there; the cover was then put on the top of this rope and screwed down by means of two bolts coming up through the

head of the tank, and nuts on the top which made as tight a joint as we could make.

Q. The bolts did not go through the tank?

A. Only through the head of the tank, they were about 8 or 9 inches long.

Q. State when that kind of tanks and cattle-cars was abandoned, and why, and what was substituted by the defendants?

A. In 1871, they were abandoned on the grounds of their being very much inferior to the iron tanks then coming into use.

Q. You may state if you know, whether that kind of tank that was described in the plaintiffs' patent has gone into disuse?

A. It has gone into entire disuse; as far as my knowledge is concerned I don't know of a single one being used.

Q. Have you been where you would know what kind of tanks are in use?

A. As far as coming into Cleveland is concerned, I had not been away; I have not been down in the oil regions for over two years; at that time there was what we call a few locals being used, running
90 to Oil City for reshipment, and some to local refineries; what we call local cars.

Q. But the bulk of the carrying was done by iron tanks?

A. Yes, sir; at that time.

Cross-ex.:

Q. You mean, do you not, that where petroleum is transported for considerable distances, that the iron boiler tank car is almost exclusively used now so far as your knowledge extends?

A. Yes, sir.

Q. But that for short distances, and for local purposes such as you have described, the wooden tank cars are still sometimes used?

A. There are none used to my knowledge at the present time; I say at that time, two years ago, there was a few, but then it was whenever they could not procure iron cars.

Q. It may be the fact, I suppose, that a very considerable number of those wooden tank cars are in use without your knowledge?

A. I rather think not at present.

Q. Or do you claim to have personal knowledge of the kinds of cars used everywhere?

A. No, sir, I don't; but as far as my knowledge goes they are in disuse.

Q. Your personal knowledge is limited in the main, is it not,
91 to such cars as are used for transporting oil from the oil region to Cleveland.

A. Yes, sir.

Q. The wooden tank cars were a great improvement, were they not, in comparison with the former methods?

A. As far as convenience was concerned they might have been, but we lost a great deal more oil in transporting it in tanks than we did in barrels; more leakage.

Q. How was it in the matter of economy in the freights?

A. That I had no control of; I don't know anything about that.

Q. So far as you knew, then, the wooden tank cars entirely superseded the prior methods, but at a loss to the people using them?

A. I said as far as we were concerned we lost more oil by the tanks than we did by the barrels. We had a wreck out at Sugar Grove in which there was a large number of tank-cars, and some filled with bar-

rels; there was not a single tank but was wrecked, and we did not lose a single gallon out of those barrels, and not one of them stopped on the cars; they all fell off. The oil in the tanks was lost, but the barrels sustained very trifling injury.

Q. Why were the wooden tank-cars so fully substituted for the prior methods?

A. Well, after they had got in use the barrels were used for some other purpose, and if they had continued to use them they could
92 do better; when the barrels were all used and gone we had to continue to use them.

Q. Those large casks and hogsheads that you spoke of were used not always on the same cars, were they?

A. That I don't know.

Q. They were used as barrels were, substantially, were they not, only they were larger packages?

A. I saw them go away, and I saw them returned; but whether they were taken off the cars to be emptied or not, I could not tell.

Redirect ex.:

Q. You may state, whether in the rapid growth of the oil production it occasioned a scarcity of barrels in the oil region?

A. Well, it would necessarily do that, but then I don't think that that had any bearing on the case.

(Signed) JOHN ANDREWS,

By consent,

Per JOHN BIGGS.

THE STATE OF OHIO,
Cuyahoga County, ss:

I, John Biggs, a notary public, in and for the county and State aforesaid, duly commissioned and qualified, do hereby certify that the above-named A. M. McGregor and John Andrews were by me first severally sworn to testify the truth, the whole truth, and nothing but the
93 truth, and that the depositions by me for them, by consent, were respectively subscribed as above set forth, were reduced to writing by myself, being a proper person and not interested in the suit, in my presence and in the presence of the witnesses respectively, and were subscribed by me for the said witnesses in my presence, and were taken at the time and place in the annexed notice specified, and continued from day to day as above set forth.

I do further certify that I am not counsel, attorney, or relative of either party, or otherwise interested in the event of this suit.

In witness whereof I have hereunto set my hand and seal of office this second day of March, A. D. 1876.

JOHN BIGGS,
Notary Public.

Amended answer.

Circuit court of the United States, northern district of Ohio. In equity.

JAMES DENSMORE ET AL.
vs. } No. 2103.
WM. C. SCHOFIELD ET AL.

Amendment to answer.

And now come the said defendants, and by leave of the court had and obtained, amend said answer:

94 1st. By changing B. Lott to D. Lott.

2nd. By changing the date of July 1, 1865, given to the patent of J. F. Keeler, to January 10, 1865.

3rd. By adding to the paragraph relating to the surrender and reissue of complainants' patent, the words as follows:

"But these defendants allege that the claims granted in said reissue were unauthorized, and not warranted in law by said original patent, or otherwise, and that said reissue is therefore void as to each and all of said claims. That the same are not for the same alleged invention described in said original patent, and that for the purpose of deceiving the public, the description and specification filed by said James and Amos Densmore for said original patent, and the same filed for said reissue, were both made to contain less than the whole truth, and untruths, so known to them, relative to their alleged invention, and more than necessary to produce the desired effect."

4th. That the paragraph relating to the suit in the United States circuit court for the southern district of New York be so changed as that there is added at the close thereof the words following, "and of invention."

5th. That the paragraph in said answer which sets out the
95 names and residences of those who had prior knowledge of said alleged invention, be so amended as that after the words "in the State of Michigan," there shall read the words, "and by J. F. Keeler, at Pittsburgh, who filed his written application for his hereinafter mentioned patent June 17, 1874."

WILLEY, TERRELL & SHERMAN, &
R. P. RANNEY,
Sol's for Defendants.

UNITED STATES OF AMERICA,
Northern District of Ohio:

Before me personally appeared Henry M. Flagler, who, being sworn according to law, says that the facts stated in the foregoing amendments are true, and that the answer, as thus amended, is true to the best of his knowledge, information, and belief.

HENRY M. FLAGLER.

Subscribed and sworn to before me this 19th day of April, 1876.
[SEAL.] CHARLES BALFOUR,
Notary Public.

Decree.

April term, A. D. 1877.

AMOS DENSMORE ET AL. } 2103. Chancery.
vs.
WM. C. SCHOFIELD ET AL. }

WEDNESDAY, *August 1st.*

And now came again the parties by their counsel, and the court having fully considered the testimony and the arguments of counsel,
96 and being now fully advised in the premises, doth order that the said complainants' bill be dismissed with costs, and it is further ordered that unless said costs, taxed at $123.93, be paid within ten days, execution issue to collect the same as upon judgments at law.

And thereupon came the complainants, by their solicitors, and gave

notice of their intention to appeal this cause to the Supreme Court of the United States, which appeal is hereby allowed, and bond therefor fixed at $2,000.00.

UNITED STATES OF AMERICA,
Northern District of Ohio, ss:

I, Earl Bill, clerk of the circuit court of the United States, within and for said district, do hereby certify that the foregoing are true copies of the pleadings, decree, and testimony in the case entitled therein, filed and entered in the court aforesaid.

Witness my official signature and the seal of said court at Cleveland, in said district, this 9th day of January, A. D. 1878.

[SEAL.] EARL BILL, *Clerk.*

(Indorsed:) U. S. circuit court, northern district of Ohio. James Densmore et al. vs. William Schofield et al. Transcript of proceedings had in U. S. cir. c't N. D. O. Clerk on transcript 125.35. P'd by J. C. Clayton, Feb. 1, '78.

(Indorsement on cover:) No. 395. James Densmore, Amos Densmore, & George W. N. Yost, appellants, vs. William C. Scofield, John Alexander, Matthew Wilson, et al. N. Ohio C. C. U. S. Filed 11th April, 1878.

ADDITION TO RECORD No. 395.

1 *Stipulation.*

In the Supreme Court of the United States.

JAMES DENSMORE ET AL.
vs.
WILLIAM C. SCOFIELD ET AL.

Appealed from the U. S. circuit court for the northern district of Ohio.

Whereas the clerk of said circuit court, in making up the transcript of the record of the proceedings of said circuit court in this case, by inadvertance omitted to include in such transcript the order of the court fixing the amount of the penal sum of the appeal bond and the fact that such bond was duly filed: It is therefore agreed on the part of the respondents that these omissions may be supplied under the supplemental certificate of said clerk and printed with the record.

Dated 21st November, 1879.

WILLEY, SHERMAN & HOYT,
Sol'rs for Defendants.

J. C. CLAYTON,
Sol'r for Complainants.

2 Know all men by these presents, that we, H. M Claflen and J. M. Richards, are held and firmly bound unto William C. Scofield, John Alexander, Matthew Wilson, Joseph G. Hussey, Wm. D. McBride, Daniel P. Eells, John D. Rockefeller, Wm. Rockefeller, Samuel Andrews, & Henry M. Flagler, in the sum of five hundred ($500.00) dollars, to the payment whereof well and truly to be made we bind ourselves, our heirs, executors, and administrators, jointly and severally, firmly by these presents, sealed with our seals, and dated this 26th day of October, in the year of our Lord one thousand eight hundred and seventy-seven.

Whereas James Densmore, Amos Densmore, and George W. N. Yost have appealed to the Supreme Court of the United States for the northern district of Ohio, from a decree of the circuit court of the United States for the northern district of Ohio, bearing date the 1st day of August, A. D. 1877, in a cause wherein the said James Densmore, Amos Densmore, and George W. N. Yost were complainants, and the said Wm. C. Scofield, John Alexander, Matthew Wilson, Joseph G. Hussey, Wm. D. McBride, Daniel P. Eells, John D. Rockefeller, William Rockefeller, Samuel Andrews, & Henry M. Flagler were respondents:

Now, therefore, the condition of this obligation is such, that if the above named appellants shall prosecute their said appeal with effect, and pay all such damages, costs, & expenses, as shall be awarded against them as such appellant therein, then this obligation to be void, otherwise to remain in full force and effect.

H. M. CLAFLEN. [L. S.]
J. M. RICHARDS. [L. S.]

Sealed and delivered in presence of—
DAN. H. KEYS.
DAN. H. KEYS.

3 NORTHERN DISTRICT OF OHIO, *ss:*

I, Augustus J. Ricks, clerk of the circuit court of the United States, within and for said district, do hereby certify that the within is a true copy of the bond for appeal, duly taken and approved in the cause in said bond set forth, which bond is now on file in the clerk's office of said court; that the amount of the penalty of said bond is as fixed and ordered by said circuit court by an order of the judge thereof, entered by said judge upon the court calendar, or docket of said court, changing said penalty from the sum of $2,000, as originally prescribed, to the sum of $500, which said order so changing the penalty of said bond was by mistake and inadvertence omitted from the journal of said court and from the record of said cause and the transcript thereof transmitted to the Supreme Court.

Witness my official signature and the seal of said circuit court, at Cleveland, this 21st day of November, A. D. 1879.

[SEAL.] AUGUSTUS J. RICKS,
Clerk Circuit Court.

(Endorsed:) Sup. Court U. S. 1879, October, term. No. 395. James Densmore & al., app'ts, vs. William C. Scofield & al. Stipulation of counsel. Copy of bond & certificate of clerk. Filed 26 November, 1879.

Supreme Court of the United States.

JAMES DENSMORE ET AL., APPELLANTS,
vs.
WILLIAM C. SCOFIELD ET AL. } No. 131.

Stipulation of counsel and addition to record.—Filed November 12, 1880.

1 THE UNITED STATES OF AMERICA,
Northern District of Ohio:

I, Augustus J. Ricks, clerk of the circuit court of the United States within and for the said district, do hereby certify that the papers herewith transmitted and numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, and 12, over my signature, are the papers on file and put in evidence in said circuit court in the cause named in the stipulation hereto attached, and referred to in said stipulation under numbers of one to twelve inclusive (except number ten therein referred to, which I cannot find).

Witness my official signature and seal of said circuit court, at Cleveland, this 10th day of November, A. D. 1880, and of the Independence of the United States of America the 105th.

[SEAL.] AUGUSTUS J. RICKS, *Clerk.*

2 *Stipulation.*

In the Supreme Court of the United States.

JAMES DENSMORE ET AL.
vs.
WILLIAM C. SCOFIELD ET AL. } In equity. 395.

Appeal for U. S. circuit court, N.

Whereas the clerk of the said circuit court, in making up the transcript of the record of the proceedings of the said circuit court in this case, by inadvertence omitted to include in such transcript—

1. The affidavit of P. Metcalf.
2. The original letters patent of J. & A. Densmore, April 10, 1866.
3. Letters patent to John Scott, Jan. 20, 1863.
4. " " " S. J. Seeley, June 2, 1863.
5. " " " R. C. Glyde, Feb. 11, 1862.
6. " " " W. W. Horton, M'ch 21, 1865.
7. " " " G. W. Howard, Sep. 26, 1865.
8. " " " J. F. Keeler, July 18, 1865.
9. " " " " " " reissue, M'ch 27, 1866.
10. " " " " " " " , August 1, 1865.
11. File wrapper and contents in re J. F. Keeler's application for patent dated Jan. 10, 1865.
12. Letters patent to S. J. Seeley, May 21, 1861.

3 It is therefore agreed by the respective parties that these omissions may be supplied under the certificate of the clerk of said court, accompanied by duly certified copies from the Patent Office of the

said letters patent, file wrapper, & contents, and be printed with the record herein.

Dated Oct. 4, 1880.

J. C. CLAYTON, *Sol's for Compl'ts.*
GEORGE WILLEY,
of WILLEY, SHERMAN & HOYT,
Sol'rs for Respondents.

(Indorsed:) Supreme Court U. S. 1880. October term. No. 131. Densmore et al., app'l'ts, vs. Scofield et al. Stipulation of counsel & addition to record. Filed 12th Nov'r, 1880.

4 Circuit court of the United States, northern district of Ohio. In equity.

JAMES DENSMORE ET AL.
vs.
WM. C. SCHOFIELD ET AL.

I, Prescott Metcalf, depose & say that I reside at Erie; am a forward'g & commission merchant. From 1861 to 1872 I was largely engaged each year in shipping & carrying by rail from Shaw's Landing, Titusville, Shefer Farm, Blood Farm, Garland's, Tidiate, Corry, & Erie, all in Pennsylvania, to Buffalo, Rochester, Albany, New York, & Boston, & to almost all the prominent places in New England, petroleum, in all several millions of barrels.

In 1863 & prior to this & after, I shipped large quantities of it in old whaling casks holding from 1½ to 8 & 10 barrels each. I shipped a great many thousands of barrels in said casks, which were sent forward, returned empty, refilled & forwarded again.

I attach two leaves from my shipping-book, showing some shipments in casks & return casks in 1863; they are correct.

5 My practice was to spike down cleats to prevent the casks from shifting. In nearly every shipment there were small & large casks as above. The casks would go to & fro on the railroad many times, carrying oil, & returning in the same cars empty to be filled & shipped again by me.

The casks were billed at what they would hold, whether filled or empty.

PRESCOTT METCALF.

Subscribed & sworn to by P. Metcalf before me this day of May, 1876.

[SEAL.]

S. S. SPENCER,
Notary Public.

6 OCTOBER 17.

BUFFALO & ERIE RAILROAD.

N. Y. C.	824.	Downer K. Oil Co	14	casks oil, eq'l to	68	bbls.	21,420		39	10
"	829.	Boston, Mass	12	do. do.	" 65	"	20,475		37	38
"	825.	Schenectady	14	do. do.	" 59	"	18,585		33	93
"	830.	Union Despatch	17	do. do.	" 69	"	21,735		39	68
				Shipper's pay fr't to Buffalo.						
N. Y. C.	827.	Lincoln & Smith	60	barrels oil			18,900		78	90
"	823.	Boston, Mass	21	do. & 12 casks oil,			18,900		81	09
		Via as above.		equal in all to 60 bbls.						
"	826.		22	casks oil eq' to	70	bbls.,	22,050		92	78
"	828.		27	do.	" 60	"	18,900		78	90

B. & E.	208. S. C. Oil Co., Syracuse, N. Y.	55 barrels	oil,	17,325		76 77
B. & E.	208. Wilsey & Sherman Syracuse, N. Y.	5 do.	do.	1,575		9 34
B. & E.	130. Philbrick & Parsons, Boston, Mass.	64* do.	do	20,160		84 16
B. & E.	207. "(K)" F"	70 do.	do	22,050		108 85
"	199. A. Farrar & Co., Boston, Mass.	70 do.	do	22,050		108 85

$869 73

P. METCALF, G.

(In pencil:)
Rec'd. Owner's risk of leakage & fire.

W. S. BROWN, *Agt.* H.

7 OCTOBER 15.

PHILADELPHIA & ERIE RAILROAD.

Car 594.	F. B. Stanchan.....5 Wood Mills, (20) Lovell's Sta., Pa	1 pc. cast'g, 5, 000	9 75
Car 506.	S. Jackson, care J. Mills, Titusville, Pa.	60 emp. barrels	24 30
Car 506.	H. Colvin, Titusville, Pa.	7 do. do	1 40
Car 505.	Downer, Corry, Pa	24 emp. casks, equal to 96 bbls.	48 66
Car 588.		15 emp. casks, equal to 90 bbls.	32 80
Car 515.		19 emp. casks, equal to 108 bbls	36 42

$153 33

P. METCALF, G.

(In pencil:)
Rec'd & p'd.

J. W. R., *Ag't*. R.

(Indorsed:) James Densmore et al. vs. Wm. Schofield et al. Affidavit P. Metcalf. Filed May 30, 1876. Earl Bill, clerk. No. 1. Augustus J. Ricks, clerk.

8 The U. States Patent Office, to all persons to whom these presents shall come, greeting:

This is to certify, that the annexed is a true copy from the records of this office of the letters patent granted Jas. & Amos Densmore, April 10th, 1866, No. 53794.

In testimony whereof, I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this thirty-first day of October, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninety-first.

[SEAL.] T. C. THEAKER.

9 No. 53794.

The United States of America, to all to whom these letters patent shall come:

Whereas James Densmore and Amos Densmore, of Meadville, Pennsylvania, have alleged that they have invented a new and useful im-

*(In pencil:) 1 short at Erie and also at Buff.

proved car for transporting petroleum, which they state has not been known or use before their application; have made affirmation that they are citizens of the United States; that they do verily believe that they are the original and first inventors or discoverers of the said invention, and that the same hath not, to the best of their knowledge and belief, been previously known or used; have paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said invention, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said James and Amos Densmore, their heirs, administrators, or assigns, for the term of seventeen years from the tenth day of April, one thousand eight hundred and sixty-six, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention, a description whereof is given in the words of the said James and Amos Densmore, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this tenth day of April, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

[L. S.]

T. C. THEAKER,
Commissioner of Patents.

10 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that we, James Densmore and Amos Densmore, of Meadville, Crawford County, Pennsylvania, have invented a new and improved mode of carrying petroleum and other like liquid substances on railway cars; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

The nature of our invention consists in combining two large, light, tight tanks, of iron or wood or other material, with the platform of a common railway flat freight car, making them, practically a part of the car, so as to carry the desired substance in bulk, instead of in barrels, casks, or other vessels or packages, as is now universally done on railway cars and thereby save carrying the weight of the said barrels, casks, or other vessels or packages.

11 To enable others to make and use our invention, we proceed to describe its construction and operation: Upon the platform of the car, A A, we make two large tanks, B B, of light wood staves, hooped, or of light sheet iron, rivetted and caulked, and put each tank directly over one of the trucks, so that the strain and weight shall be upon that part of the car, the stronger and the better able to bear them. Upon the top of each tank, we put a frame work C C C C, and through the corners of the said frame-work, close to the outside of the tank, down through the platform of the car, we pass the bolts, 1, 2, 3, 4, and

fasten and press the tank to the car with screws upon these bolts; the framework on the top of the tank screwed down upon the tank by the bolts outside and close to it, acting as a brace, also, to prevent any shock or jar to the tank from the swaying of the car while in motion. In the top head of each tank, we make a man-hole, through which to pour the substance to be carried, and to get into the tank for any desired purpose; and around each man-hole we put a casing, and over the casing and man-hole we put a cover, D, to prevent rain, snow, dirt, or anything from falling or leaking into the tank.

At the bottom of each tank we put in a faucet E, whereby to draw off the contents of the tank. And up the side of each tank we
12 put the steps F, and across from one tank to the other we put the run-way G, to enable the brakeman or other person to pass from one end to the other of the car with facility.

What we claim as our invention and desire to secure by letters patent are the two tanks B B, attached to the platform of a car A A, by means of the frame-works C C C C and C C C C, together with the bolts 1 2 3 4, and 1 2 3 4 directly over the trucks, when the same are constructed in the combination as hereinbefore described, and for the purposes set forth hereinbefore, or any other mechanical construction substantially the same and which will produce the same results.

We do not claim any one particular item as new, but we do claim the combination and application as entirely new, and as a valuable and useful improvement.

JAMES DENSMORE.
AMOS DENSMORE.

Witness:
WILLIAM DENSMORE.
C. M. BOUSH.

(Here follows diagram marked page 12.)

13 The U. 'S. Patent Office to all persons to whom these presents shall come, greeting.

This is to' certify that the annexed is a true copy from the records of this office of the letters patent granted John Scott, Jan'y 20th, 1863, No. 37461.

In testimony whereof, I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this sixteenth day of November, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninety-first.

[SEAL.] T. C. THEAKER.

14 No. 37461.

The United States of America to all to whom these letters patent shall come:

Whereas, John Scott, of Lawrenceville, Pennsylvania, has alleged that he has invented a new and useful improved car for carrying petroleum, &c., which he states has not been known or used before his application; has made oath that he is a subject of Great Britain; that he does verily believe that he is the original and first inventor or discoverer of said invention, and that the same ha' not, to the best of his knowledge and belief, been previously known or used; has paid into the Tresury o' United

States, the sum of thirty-five dollars, and presented a petition to the Com missioner of Patents signifying a desire of obtaining an exclusiv property in the said invention, and praying that a patent may be grante for the purpose.

These are therefore to grant, according to law, to the said John Scot his heirs, administrators, or assigns, for the term of seventeen years fro the twentieth day of January, one thousand eight hundred sixt three, the full and exclusive right and liberty of making, constructin using, and vending to others to be used, the said invention, a descri tion whereof is given in the words of the said John Scott in the schedu hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made paten and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twentieth da of January, in the year of our Lord one thousand eight hundred an sixty-three, and of the Independence of the United States of America th eighty-seventh.

J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

15 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, John Scott, of Lawrenceville, in the county of Alleghany, and State of Pennsylvania, have invented a new and improved car for carrying petroleum, &c., in bulk, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of my invention, taken in the plane indicated by the line *x x*, Figure 2.

Figure 2 is a transverse vertical section of the same, the plane of section being indicated by the line *y y*, Figure 1.

Similar letters of reference in both views indicate corresponding parts.

The object of this invention is to arrange a railroad car in such
16 a manner that the same is capable of carrying petroleum or other liquid in the bulk, thereby saving the necessity of carrying the load of the barrels with the liquid and avoiding the loss occasioned by the leakage of the barrels during the passage.

The invention consists in the employment for the purpose of carrying petroleum or other liquid in the bulk of a railroad car, lined with sheet metal, in such a manner as to produce an oil-tight box, capable of holding a large quantity of liquid without leakage. It consists, further, in the arrangement of longitudinal and transverse partitions in the interior of the car, said partitions being perforated close down at the bottom, in such a manner that the several compartments formed by said partitions communicate freely with each other, and that by said partitions a splashing of the liquid contents of the car is prevented.

To enable those skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawing.

A represents a railroad car the body of which is constructed in the

form and size of an ordinary baggage car or in any other suitable size and shape. It runs on wheels B, in the ordinary manner, and its
17 body is provided with double walls *a b*, the outer wall being made of wood or other bad conductor of heat, and the lining being made of sheet-metal, which is soldered together, so that a perfectly oil-tight box, B, is produced.

This box is covered by the top *c* of the car, which may be rigidly attached to the body and provided with one or more inlet openings, or which may be made wholly or partially movable, so that it can be taken away entirely, or in sections, whenever it is desired to obtain access to the interior of the car.

The box B is divided by a series of longitudinal and transverse partitions, *e f*, into a number of compartments, *g*, and the partitions *e f* are perforated with holes, *h*, close down to the bottom, so that a free communication is effected between the several compartments, and that petroleum or other liquid let into one compartment has free access to all parts of the box.

If the box is now filled with petroleum or other liquid the partitions *e f* divide the mass of liquid, thereby preventing the same from splashing or forcing of the top when the car is in motion.

A faucet, *i*, in the side or end of the car serves to draw off the liquid into barrels or other suitable receptacles after the car has
18 arrived at the point of its destination.

By the use of my car the freight of petroleum, or other liquid, will be considerably reduced, it being not necessary to carry the barrels with the liquid, and consequently a large saving in weight and in space is effected. And, furthermore, all the loss occasioned by the leakage of the barrels, while the same are carried from one place to another, is entirely obviated.

Having thus fully described my invention, what I claim as new and desire to secure by letters patent is—

The employment of a railroad car, A, lined with sheet metal substantially as herein described, for the purpose of carrying on a railroad petroleum or other liquid in the bulk.

And I also claim the arrangement of the partitions *e f*, perforated near the bottom with holes *h*, in the interior of the car A, as and for the purposes specified.

JOHN SCOTT.

Witnesses:
JAS. W. CAMPBELL.
GEO. W. BARR.

Ex'd.—A. T.

(Here follows diagram marked page 18.)

19 The U. States Patent Office to all persons to whom these presents shall come, greeting :

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted Sam'l J. Seeley, June 2nd, 1863, No. 38765.

In testimony whereof, I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twenty-fifth day of June, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninetieth.

[SEAL.] T. C. THEAKER.

20 No. 38765.

The United States of America, to all to whom these letters patent shall come:

Whereas Samuel J. Seely, of Brooklyn, New York, has alleged that he has invented a new and useful improved car for carrying petroleum, &c., which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said invention, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said invention, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Samuel J. Seely, his heirs, administrators, or assigns, for the term of seventeen years from the second day of June, one thousand eight hundred and sixty-three, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention, a description whereof is given in the words of the said Samuel J. Seely, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the City of Washington, this second day of June, in the year of our Lord one thousand eight hundred and sixty-three, and of the Independence of the United States of America the eighty-seventh.

W. T. OTTO,
Act'g Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

21 The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern:

Be it known that I, Samuel J. Seely, of the city of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful improvements in railway cars for carrying petroleum or other substances; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a car constructed according to my invention, the wheels and tracks being omitted, as unnecessary to explain the improvements.

Figure 2 is a central longitudinal section of the same.

Figure 3 is a transverse vertical section of the same.

Figure 4 is an inverted plan of the same.

Similar letters of reference indicate corresponding parts in the several figures.

22 This invention consists in the construction of the body of a

railway car of corrugated or other sheet iron in the form of a cylinder, whereby it is made of the greatest strength with the least practical weight of material, and at less expense than a wooden car of the same strength, and is rendered especially applicable to the transportation of petroleum and other liquid substances. It also consists in the division of the cylindrical iron car body into compartments by means of transverse or longitudinal, or both transverse and longitudinal bulkheads, which serve to strengthen it very materially. It also consists in the combination with such car body of a system of pipes running under the whole or any portion of the length of the bottom of the car, near the sides thereof, and furnished with a series of cocks and flexible branch pipes for drawing off the liquid contents of the car into several barrels or other vessels at once. And it further consists in the protection of the said cocks by means of boxes so constructed and arranged as
23 to allow the flexible branches to be stowed away within them, and furnished with suitable doors through which the cocks may be reached to open and close them, and through which the flexible branch pipes may be drawn out for filling the barrels or other vessels.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a platform constructed like the platform or floor of an ordinary car, and intended to be supported upon trucks in the usual manner; B, C, D is a cradle constructed upon the said platform or floor and extending the whole length thereof, for the reception of the cylindrical sheet-iron body E, the said cradle being composed of horizontal side-pieces B and C, of wood, and standards D of wrought-iron, the side pieces B being arranged upon and secured to the platform in such a manner as to serve as chocks to prevent the rolling of the body, and the pieces C being supported by the standards in such a manner as to occupy positions against the sides of the body a little below the centre thereof.

24 The cylindrical body E should be constructed of a shell of corrugated or ridged or plain sheet-iron, with heads of concave form and with a lining of plain galvanized iron. The plates of iron employed in the construction of the shell and heads may be of any suitable size and united by riveting. The galvanized plates, of which the lining is composed, may be soldered together. The transverse bulkheads *a*, and the longitudinal ones *b*, are also made of galvanized iron and riveted and soldered into their place, and may be made perfectly tight to form tight compartments. The object of making the lining and partitions of galvanized iron is to facilitate repair by soldering, and to prevent discoloration of the oil or other liquid. Communication may be had between the compartments by sliding-gates, *c*, as shown in figure 2, operated by rods, *e*, passing through the top of the body, or they may be made with openings at the bottom, as shown at *d* in the same figure, to allow free communication for the liquid between the several compartments, as may be most convenient, and in the latter case they should be provided with manholes, *e*, fitted with
25 manheads, *f*, to allow the ingress and egress of persons from one compartment to the other for cleaning or for any other purpose. One or more manholes, *g*, and manheads, *h*, are also provided in the top of the body for filling it and to permit the entrance of persons to the interior. The body, besides being seated in a cradle, is secured to the platform A by a suitable number of wrought-iron straps, *i i;* passing over it and fastened to the platform, *j j*, are cocks secured in each head of the cylindrical car body close to the bottom thereof; and *k k* are two

pipes secured under the whole length of the bottom of the car near the sides thereof, and each connected with both of the said cocks; *l l* are the flexible branch pipes, of vulcanized India rubber or other suitable material, of which there are any suitable number, connected with each of the pipes *k k* by means of cocks, *m m*. These branch pipes are furnished with metal nozzles to facilitate their insertion into the bungholes of barrels, and to protect their ends from wear; *n n* are the boxes for
26 the protection of the cocks *m m*, and for stowing away the branch pipes when not required for use. These boxes are secured under the floor of the car and are provided with doors, *p p*, in their outer sides, the said doors being hinged or otherwise attached as may be most convenient.

To fill the car with oil, or other liquid, the said liquid may be either pumped in at the upper manholes, *g g*, or allowed to run thereinto from an elevated stationary reservoir, in which it may have been previously collected. When the liquid has been transported in the car to its destination, one or both of the cocks *j j* are opened to allow it to flow into the pipes *k k*, and the drawing off can be effected from as many of the branch pipes *l l* as may be desirable, by opening the doors of their respective boxes, drawing out the said pipes, and inserting them into the barrels or other vessels, and opening the cocks *m m*. These branch pipes enable the filling of several casks or vessels, to be effected at the same time, independently of each other, as each is opened and shut off by its own cock, *m*.

27 What I claim as my invention, and desire to secure by letters patent, is—

1st. A railway car having its body composed of a corrugated or other sheet-iron cylinder, substantially as and for the purpose herein specified.

2nd. The combination with the car body, of one or more pipes, *k k*, arranged below the car as described, and furnished with a series of flexible branches, *l l*, connected by cocks, *k k*, substantially as and for the purpose herein set forth.

3rd. The boxes *n n*, arranged as described for the protection of the cocks *k k*, and for the stowage of the flexible branch pipes *l l*.

SAM'L J. SEELY.

Witnesses:
M. S. PARTRIDGE.
DANIEL ROBERTSON.

Ex'd.—A. T.

(Here follows diagram marked page 27.)

28 The U. States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted R. C. Glyde, Feb'y 11th, 1862, No. 36359.

In testimony whereof I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-fifth day of June, in the year of our Lord one thousand eight hundred and sixty-six and of the Independence of the United States the ninetieth.

[SEAL.] T. C. THEAKER.

29 No. 34359.

The United States of America to all to whom these letters patent shall come:

Whereas Richard C. Glyde, of Pittsburg, Pennsylvania, has alleged that he has invented a new and useful improvement in vessels for transportation of carbon and other oils, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement, and prays that a patent may be granted for that purpose.

These are therefore to grant, according to law, to the said Richard C. Glyde, his heirs, administrators, or assigns, for the term of seventeen years from the eleventh day of February, one thousand eight hundred and sixty-two, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Richard C. Glyde, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand at the city of Washington, this eleventh day of February, in the year of our Lord one thousand eight hundred and sixty-two and of the Independence of the United States of America the eighty-sixth.

CALEB B. SMITH,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

30 The schedule referred to in these letters patent, and making part of the same.

To whom it may concern:

Be it known that I, Richard C. Glyde, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful improvement in the mode of transporting carbon oil, and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing forming part of this specification, which represents a boat or vessel designed for conveying carbon oil in bulk from place to place by water.

The oil, which is procured in large quantities in certain localities in the United States by boring into the earth, commonly known as carbon oil or petroleum, is ordinarily put into barrels, and thus transported from the wells to market. The barrels used for this purpose must be of the very best and most expensive kind, made of oak, tightly fitted together, and then coated inside with glue to prevent the leakage of the oil, which is of so penetrating a character that a tight oak barrel
31 without the glue coating is ineffectual to prevent a serious loss

by wastage of the oil through the pores of the wood. The costliness of these barrels, and the necessity of carrying them back from the oil market to the wells, often a very great distance, is a very serious drawback to the value of the oil, which is now found in such large quantities that its market price is greatly reduced without a corresponding diminution of the expense of barreling and transportation. It so happens that the oil is generally found near some stream or river, often shallow, but generally navigable for small boats of light draft. It is therefore generally taken to market by water, but hitherto in barrels such as described, which are too costly to throw away, and have to be carried back empty in boats. Here, therefore, is an indication of a want of some cheap and efficient mode of conveying the oil by water in bulk to avoid the trouble and expense of barreling at the wells. The simplest plan would be, of course, to pour the oil into small, flat-bottomed boats, well caulked to prevent leakage. This plan will not answer, however, with boats of ordinary construction, for the following reasons: In shallow streams where rippies occur, the boat is liable to have one end or the other tilted up, the result of which would be that the oil,
32 being in bulk and in a large quantity, would flow suddenly to the lower end inside of the vessel, and overflow the sides of the boat, resulting in a frequent and considerable loss. If the stream on which the boat were floating is deep enough for steamboats, and the oil boats were towed along, the waves caused by the steamboat would cause such a rocking of the oil boat as would result in like manner in the overflow and loss of oil, or if the waves of water washed over the sides of the oil boat, the water would sink to the bottom of *of* the boat, displacing the oil, which would thereby be lost.

To obviate these difficulties and render practicable the transportation of carbon oil by water, I have contrived an oil boat or vessel which is represented in the accompanying drawing, and which I will proceed to describe.

The boat may be made of any convenient size or shape, but I prefer to make it with a flat bottom with sides parallel or nearly so, in order to gain the greater capacity with the least possible draft. The boat should be tightly built and well caulked.

In the drawing *a a* the sides of the boat *b*, are the stern, and *c* the bow or forward end. At intervals of a few feet apart I place partitions *d d*, which are fitted closely to the sides and the bottom of the boat, and rise nearly to the level of the top of its sides, as seen in the drawing.
By this means I divide the boat into a number of compartments
33 of the width of the boat but very short. The oil is poured into these compartments, which may be filled up nearly to their brim with the fluid. Now it is manifest that in case of the tilting of the boat by passing over a ripple or shoal place in the stream, the difference in height of the oil at the opposite ends of each compartment will be very slight, being as much less in each compartment than it would be in the whole boat without compartments, as the length of each compartment is less than the length of the whole boat. Besides this, the division of the oil into separate portions, prevent the violent surging of the fluid contents of the boat which would result from the motion of the boat, and which would swamp it, if the oil were in one mass.

In order still further to prevent any loss of oil by the longitudinal motion or side rocking of the boat, or by the breaking of water over its sides, I cover each compartment with a deck head *e*. These deck heads extend from the center of one partition *d* to the center of the next one, so that the deck heads are supported by the partitions.

These deck heads may be fitted so closely as to prevent the oil
34 from passing up between them, and are a great advantage in diminishing the loss of oil by evaporation.

Having thus described my improvement, what I claim as my invention and desire to secure by letters patent is—

The use for the transportation of oil in bulk, of boats divided by partitions into separate compartments substantially in the manner hereinbefore described.

Also, the use for the transportation of oil in bulk, of boats divided into compartments, covered over with deck heads in the manner substantially as hereinbefore described.

In testimony whereof the said Richard C. Glyde, hath hereunto set his hand in presence of us.

RICHARD C. GLYDE.

Witnesses:
JAMES M. BAILEY.
M. G. CUSHING.
EX'D. A. T.

(Here follows diagram, marked page 34.)

35 The U. States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted W. W. Horton, March 21st, 1865, No. 46906.

In testimony whereof I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this sixteenth day of November, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninety-first.

[SEAL.] T. C. THEAKER.

36 No. 46906.

The United States of America, to all to whom these letters patent shall come:

Whereas W. W. Horton, of Freeport, Illinois, has alleged that he has invented a new and useful improved method of transporting oil, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said invention, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said invention and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said W. W. Horton, his heirs, administrators, or assigns, for the term of seventeen years from the twenty-first day of March, one thousand eight hundred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention, a description whereof is given in the words of the said W. W. Horton, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-first day of March, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the eighty-ninth.

J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

37 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, W. W. Horton, of Freeport, in the county of Stephenson and State of Illinois, have invented a new and improved method of storing and conveying oil in bulk; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, which drawings will be hereinafter referred to.

The nature of my invention consists:

First, in the use of both movable and stationary iron tanks of novel construction for receiving, holding, and conveying the oil; and second, in a regular organized system for moving the oil in bulk from the well to the refinery or place of shipment.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it more in detail.

It is well known that great difficulty and expense has hitherto
38 attended all efforts made to convey oil from the wells to market. First, it is usually difficult and oftentimes impossible to procure a sufficient supply of barrels; even when they are obtained there is a great loss of time in filling, handling, and emptying and returning them. There is also a great loss of the oil itself by leakage and evaporation, and the barrels have also to be renewed at short intervals; and when once used for this purpose they cannot be used for any other. The transporting and storing of coal oil or petroleum in barrels and wooden tanks is also very dangerous, producing a great risk of life and property, and hence necessitating a heavy rate of insurance, not only on the oil itself, but also upon the buildings in which it may be stored, and the surrounding or adjacent property.

The object of my invention is to obviate these difficulties. This I propose to do by the following plan:

First. I construct at the well a stationary receiving tank, constructed of iron, in any suitable manner, and of proper form and size, into which the oil flows, or is pumped from the well. This tank should be so located that oil will flow from it into a portable tank, A, which is to be mounted
on a cart or wagon, as in Fig. 4. To accomplish this, it is only
39 necessary that the receiving tank should be so placed that its bottom shall be on a level with the top of the portable tank A. In most localities in the oil region advantage may be taken of the inclined surface of the ground for this purpose; and in places where the surface is not sufficiently inclined, the tank may be elevated on masonry or

frame work, or the roadway may be cut down so as to lower the movable tank A to the proper position.

At some near and convenient point on the line of the railroad over which the oil is to be conveyed, I locate another stationary receiving tank, which latter tank should be so elevated above the track that the oil will flow readily, by its own gravity, from it into movable tanks placed on the cars upon the track.

At the terminus of the route, or at the point or points where it is desired to deliver the oil for use or shipment, or for storage or refinement, I locate still larger or more numerous receiving tanks—these last to be so located that the oil will readily flow from the tanks on the cars into them.

These tanks—both movable and stationary—are to be provided with a short inlet-pipe, to which a hose may be securely attached, and which can be closed tight by any suitable means when the hose is removed or detached. This inlet-pipe may, if thought desirable, as it probably will be on the movable tanks, be made to project into instead of out from the body of the tank, whereby it will be out of the way and less liable to injury; or, a simple ring or socket may be used, with a screw thread cut on its interior, into which the hose may be inserted, it being provided with a metallic end piece, with a screw cut on it for that purpose. In like manner a metallic plug may be secured, to close tightly the inlet orifice when the hose is removed. In case a projecting tube is used, a metallic cap may be screwed on over the end, and thus close it tightly.

Each of the tanks should also be provided with a stop cock of proper size, located at or near its bottom, for the purpose of drawing off the oil from it. In the portable tanks it may be desirable to insert these cocks in a recessed portion of the tank, so that their outer ends shall not project outward beyond the outer surface of the tank, by which means they will be protected from being hit or injured in any way, which, should it occur, would be likely to cause the tank to leak, and thus waste the oil. These outlet cocks should all be provided with suitable devices or means for securely attaching hose, by which to convey the oil from them to the other tanks, or receptacles of whatever kind.

Each tank is also provided with a large tube or chimney, e, which projects some distance above the top thereof, and is securely attached thereto. In these tubes, e, near their upper ends, and at some distance apart, are secured two diaphragms, n, composed of fine wire gauze. By this means the explosive vapors formed by the evaporation of the oil—and the formation of which is greatly increased by agitation of the oil incident to its being transported—are permitted to escape, and at the same time the contents of the tank are protected from danger by fire, as it is well known that flame will not pass through this gauze when made of the requisite fineness. To prevent the gauze from being broken or injured, a perforated metallic plate may be secured over it, or it may be otherwise protected if desired.

As the oils derived from different wells is of different specific gravities, and consequently varies in value, it is necessary that they be kept and stored separately. For this purpose I propose to divide the receiving tanks at the railway stations, and also the storing tanks at the various points, with a series of compartments, so that the oil from the various wells may be kept separate. By this means the proprietors of different wells are enabled to avail themselves of this general means of storing and transporting their oils, and yet keep them distinct and separate from those of other wells or of other qualities.

The movable tanks, C, I propose to make of proper size to occupy an ordinary platform car, and prefer to make them in the form shown in Fig. 3. These tanks are made flat on their bottom, so that they can be readily set on an ordinary platform car, and as readily removed therefrom whenever the car is desired for other uses.

The operation of my plan will be readily understood; but in order to render its advantages more apparent, it is proper that I should state them more in detail. As at present arranged, side-tracks, or branches of railway, are built, extending laterally from the main road off toward the various localities where the wells are operated. A train passing from the city out into the region of the wells leaves a number of cars—according to the capacity or wants of the wells—at the end of each of these branch roads, where they remain for one or more days until loaded with the barrels of oil, when the locomotive comes and
43 hauls them away, thus necessitating the use of two sets of cars, or of making two trips for each train or load—one to bring and leave the cars, and another to take them away. As the rent or use of a car is estimated by their owners at about six dollars per day, and as these cars stand idle on the average about three days for each trip made, under the present system, it follows that the loss from this source alone is very great. Then there is much loss of oil and time, in barreling it up at the wells; and many hands and much time and labor rendered necessary to get it aboard of the cars. In rolling and handling the barrels, the oil is necessarily much agitated, whereby gas is rapidly generated, and as this has no ready means of escape, it forces both itself and the oil out through the pores of the wood, and thus causes a continuous loss and waste, until it arrives at its journey's end and is emptied out of the barrels; but usually it is not emptied from the barrels, or, if emptied, it is again stored in them, after being refined, and thus the loss is continuous. The loss from these causes alone is estimated by those familiar with the business at one eighth of the entire product; this loss being already not less than from six to eight millions of dollars per annum; and it is evident that by the present plan this loss will continue to increase just in proportion to the
44 increase of the supply from the wells. Most, if not all, of this loss will be saved by the adoption of my plan. Again, a large number of men have to be employed to fill, handle, haul, load, unload, and empty the great number of barrels required under the present plan; and these men have to be paid high wages, as the work is both laborious and unpleasant. By the adoption of my invention, much the larger portion of this will also be saved, as the filling and emptying of the barrels, together with their handling, will all be dispensed with. One man with each team to haul the oil from the well tank to the station tank is all my plan requires. Then as the train arrives, a hose is connected at one end to the station tank, and at the other to each of the car tanks, the cocks turned, and the train is loaded in a few minutes and proceeds at once to its destination, whereby the labor of a large number of men is dispensed with, and no cars are kept standing idle. When the train arrives at its destination, the oil of all the cars is delivered into the receiving or storing tank simultaneously by a similar process, and in a very short time; and thus an immense saving is also effected.

To apply my system or invention in cases where the oil is to be shipped for transportation abroad, I propose to provide the vessels with similar tanks, properly located, and by having the storing tanks located
45 on the wharves, at a proper elevation, the oil can be conveyed on

ship-board by the means already described in a very brief space of time; whereby several thousand dollars will be saved on each cargo thus put aboard, besides lessening materially the detention of the vessel, and securing a corresponding saving in the wages of the crew and officers. Whenever it becomes necessary to have the storing tanks elevated for such or similar purposes, the cars may be readily elevated to a corresponding height by building a short inclined track, the same as is now done at the grain warehouses along our Western railways.

By these means the work is reduced to a perfect system, whereby it is far more rapidly and economically performed, and a great saving effected.

Having thus fully described my invention and its mode of operation, what I claim and desire to procure by letters patent is:

1st. Oil-tanks, both stationary and movable, constructed and operating as and for the purposes herein set forth.

2d. I claim the method or process herein described for storing and transporting oil in bulk, substantially as set forth.

W. W. HORTON.

Witnesses:
JOHN P. JACOBS.
EDM. F. BROWN.

W. B. J.

(Here follows diagram marked page 45.)

46 The U. States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted G. W. Howard Sept. 26th, 1865, No. 50126.

In testimony whereof, I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this fourteenth day of November, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninety-first.

[SEAL.] T. C. THEAKER.

47 No. 50126.

The United States of America, to all to whom these letters patent shall come:

Whereas G. W. Howard, of Pontiac, Michigan, has alleged that he has invented a new and useful improvement in tanks for transporting oil, &c., which he states has not been known or used before his application; has made oath that he is a citizen of the United States, that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said G. W. Howard, his heirs, administrators, or assigns, for the term of seventeen years from the twenty-sixth day of September, one thousand eight hun-

dred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said G. W. Howard in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent-Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-sixth day of September, in the year of our Lord one thousand eight hundred and sixty-five and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] T. C. THEAKER,
Commissioner of Patents.

48 The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern:

Be it known that I, George W. Howard, of Pontiac, in the county of Oakland, and State of Michigan, have invented a new and useful improvement in tanks for transporting and storing mineral oils, of which the following is a full, clear, and accurate description, reference being had to the accompanying drawings making a part of this specification in which—

Fig. 1 represents a view in perspective of my invention adapted to railroad transportation.

Fig. 2 is a longitudinal central section through the same, and

Fig. 3 is a view of a tank as applied to a ship.

The magnitude of the production of petroleum, and the commerce incident thereto, renders some effectively economical mode of transporting and storing it a desideratum, and this it is the object of my
49 invention to supply by a tank that shall effectively prevent all those casualties incident to this peculiar commodity, and the known modes of transporting and storing the same.

It is well known that when closed vessels are filled and used for transporting and storing petroleum, they are liable to be fractured by the expansion of their contents, which produces great waste, and that when tight vessels only partially filled are used, expansive gasses are generated which escape, and mingling with the atmosphere become highly inflammable so as to cause destruction of life and property, and the latter cause has already produced extensive calamities.

If transported or stored in open or ventilated vessels, the lighter portions of these oils evaporate, and the heavier thicken and blacken and deteriorate in value, and are more liable to become ignited from the larger surface exposed. Besides which the surging that takes place in all transit, whether by rail or ship, renders the agitation in the open vessels, whether barrels or tanks, liable to all the objection to rolling cargo of any kind, and augments evaporation from the oils as well as deteriorates the mass in value.

Now my invention obviates all these causes of waste, and
50 renders the transportion and storage of oils positively safe, and of course secures an important economy in dispensing with bar-

rels and in the quantity of oil that is saved, and in casualties, and to this end my invention consists in forming the tank for transporting and storing mineral, animal, or vegetable oils in large quantities, of suitable sheet metal made in any form, but adapted to the conveyance to be employed, perfectly tight with a well centrally placed in the bottom of the tank which communicates with a cistern or reservoir on the top of the tank by a pipe that enters the well and filling the well and covering the bottom of the tank with water for the purpose of accommodating expansion in the oil, and having pipes suitably arranged to fill and discharge the tank.

In adapting my invention to a railroad car I construct the tank A of the length and width of the car frame and of any determined height to contain a quantity of oil that shall constitute a proper burden of a single car or truck frame.

The tank A I make of light sheet metal suitably braced for strength with a well, B, placed centrally on its bottom, the well being of a depth equal or nearly equal to its diameter; on the top of the car I place a reservoir, C, having a perforated top, and in the construction the
51 bottom of the reservoir may constitute a part of the top of the tank; a pipe, *a*, passes from the bottom of the reservoir to the centre and nearly to the bottom of the well B, this pipe being open from the cistern to the well. I place a pipe, *b*, in the top of the tank, through which to introduce the oil into the tank; and at the side of the well I place a pipe, *c*, through which the contents of the tank can be withdrawn. The tank thus constructed and properly placed upon its truck frame is made to receive a sufficient quantity of water to fill the well and cover the bottom of the car an inch or so in depth, as shown in the red dotted line of figure 2, when the tank can be filled with oil in any suitable manner through the pipe *b*, which must be closely stopped when the tank is entirely full. Now as the increase of the temperature causes the oil to expand in the tank A, the water will be forced up the pipe *a* into the reservoir C from the well B and bottom of the tank, and should the expansion be excessive the surplus water can flow off through the ventilating orifices in the top of the cistern without any waste of oil or danger of bursting the tank; and when from a change of temperature the oil in the tank contracts in volume, the water will return from the reservoir to the well and bottom of the tank, and thus keeping the tank always
full will tend to prevent the generation of gasses from the oil,
52 and also preclude surging or slopping.

It is obvious that instead of one tank for a single railroad truck frame, that the tank can be varied in dimensions for the convenience of handling or transporting on common wagons into two or more tanks, and that these, when filled, may be hoisted by a crane to be placed upon or removed from the truck or wagon; it is also obvious that the form of the tank can be varied without departing from my invention.

To adapt my invention to stationary storage fire-proof tanks, it is only necessary to place a reservoir on the top of each tank, and pass therefrom an open connection pipe to near the bottom of the stationary tank, when, covering the bottom of the tank with a quantity of water sufficient to rise a few inches above the bottom end of the pipe, and filling the remainder of the tank with oil, the action of contraction and expansion will produce the same result as when the well is employed in the transporting tank.

To adapt my tank to ships for ocean navigation, it may be necessary or convenient to form their outline to correspond with the mould of the ship; but no other change in the tank or tanks will be required,

53 for the entire hole may be filled with a single tank, strengthened properly by braces and partitions or bulk-heads, or it may be filled by sectional tanks sectionally arranged to correspond with the mould of the interior of the ship, only taking care to have wells, reservoirs, and filling and emptying pipes to each separate section of the tank.

For transportation on inland waters, whether lakes or rivers, floating craft may be constructed to receive my tanks adapted in any form of outline for convenient stowage; or the tanks can be so made as to be floated or towed independently. It is of course indifferent to my invention how this tank is filled or emptied, for it is equally well adapted to the use of syphons, pumps, or hose for either purpose.

What I claim as my invention, and desire to secure by letters patent, is—

First. The closed tank for transporting or storing oils securely when arranged and operating substantially in the manner described.

Second. Accommodating the expansion or contraction of oils in closed tanks by the resistance of a column of water, substantially in the manner described.

Third. The combination of the tank, cistern, and reservoir sub-
54 stantially in the manner and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

G. W. HOWARD.

Witnesses:

EDM. F. BROWN.

WM. D. BALDWIN.

Ex'd.—A. T.

(Here follows diagram marked page 54.)

55 The U. States Patent Office, to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the reissued letters patent granted J. F. Keeler, July 18th, 1865, No. 2031.

In testimony whereof, I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this twenty-fifth day of June, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States the ninetieth.

[SEAL.] T. C. THEAKER.

56 Reissue No. 2031.

The United States of America, to all to whom these letters patent shall come:

Whereas Joel F. Keeler, of Pittsburg, Pennsylvania, has alleged that he has invented a new and useful improvement in constructing railroad cars for transporting oil and other liquids (for which letters patent were issued to him, dated January 10, 1865, which letters having been surrendered by him, the same have been cancelled and new letters ordered to issue to him on an amended specification), which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement, and that the same hath not, to the best of his knowledge and belief,

been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Joel F. Keeler, his heirs, administrators, or assigns, for the term of seventeen years from the tenth day of January, one thousand eight hundred and sixty-five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Joel F. Keeler, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this eighteenth day of July, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

The schedule referred to in these letters patent, and making part of the same.

To all whom it may concern:

Be it known that I, Joel F. Keeler, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in the construction of railroad freight-cars, and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which

Figure 1 is a perspective representation of my improved freight-car;

Figure 2 is a longitudinal vertical section of the lower part or tank;

Figure 3 is an exterior end view or elevation of my improved freight-car;

Figure 4 is a horizontal longitudinal section through the lower part or tank.

In the several figures like letters of reference denote similar parts.

My improvement is designed to adapt railroad freight-cars (technically so called) to the carrying of liquid freight in bulk and dry freight of any description in the same car, and that without detracting from the capacity of the car for either kind of freight by the carriage of the other.

In the construction of a freight-car for the purposes specified, I also attain the following objects, which distinguish my invention from other contrivances for the transportation of liquid freight in bulk, viz:

1st. I make the tank portion of the car to extend downwards below the level of the top of the car wheels, so as to make use of space otherwise unoccupied and render the car more steady by materially lowering its centre of gravity when the tank is full without rendering it top-heavy when the tank is emptied and the upper part loaded.

2nd. I make the tank portion of the car self-supporting by so con-

structing it as to form itself the truss of the cars, which sustains the superincumbent weight of dry freight.

3rd. I so construct the top part or cover of the tank part of the car as to form one or more contracted spaces, each of less horizontal area than the body of the tank, so as to give room for the expansion and contraction of the liquid contents of the tank and at the same time check the tendency of the liquid contents to surge or move in waves when the car is in motion.

59 4th. I provide for the passage of air between the cover of the tank and the bottom of the freight box for the purpose of keeping the fluid contents of the tank cool and carrying off any gas.

To enable others skilled in the art to construct and use my improved freight cars, I will proceed to describe my invention more fully.

I construct my freight cars in any of the known forms and modes, excepting as hereinafter specially described as differing therefrom, and apply to them axles and wheels or trucks, with two or more wheels, as I deem advisable, together with springs, bumpers, brakes, and other ordinary appendages of railroad cars; but, in order to fit them for the transportation of liquids in bulk, without detracting from their adap'tion to the carriage of other freight, I prefer to make the lower section of the car, or the "truck tank," as I call it, of plates of iron, either black or coated with other metal, although I do not desire to confine myself to the use of that material.

In the drawing *a b* is the truck tank, the lower part of which I prefer to make of semicircular shape, like the part marked *b*, or of ogee shape like the parts marked *a*, * * * * thereby securing the great-
60 est lateral and perpendicular capacity consistent with the attachment of the trucks or wheels. The parts *a* and *b* are connected together so as to form one tank, and the tank is so constructed, relatively to the wheels, that its bottom, both in the parts *a* and *b*, extends downwards below the top of the wheels. The part *b*, situate in the middle of the car, being out of the reach of the trucks and wheels, is fuller and deeper than the parts marked *a*. Inside of the truck tank, *a b*, are cross bulkheads *d* and longitudinal partitions *c*, which add staunchness to the tank, and check the surging of its liquid contents when the car starts or stops. I also add braces *e e* if needed.

The upper part or cover *h* of the truck tank forms the bottom of the upper part or box of the car for carrying dry freight. This cover *h* I make of sheet iron, corrugated, as shown in Figures 1 & 3, the corrugations strengthening the truss and stiffening the floor. These corrugations in the tank cover serve also to form contracted spaces when the tank is filled with liquid to the level of the lower line of the wavelike corrugations. Each of these spaces is smaller in horizontal area than the body of the tank, and serves the double purpose of giving room for the expansion of the liquid in the car, and serves materially to
61 check the surging of the liquid by the motion or stoppage of the car.

The several compartments, formed by the bulk-heads *d* and partitions *c*, have holes to permit the fluid contents, when desired, to run together; which holes may be closed, and thus the contents kept separated. The holes at *g g*, with stop-cocks, tubes, &c., permit the contents to be drawn off readily, and other holes, *f f*, near the top of the tank, which are closed in the usual way, allow of the speedy filling or clearing of the tank.

The joints of the tank are not only lapped and rivetted, but also sol-

dered, and when the iron is thick enough to permit of it the joints may be caulked, so that leakage is provided against in every possible way.

The tank thus constructed forms the truss or frame, which supports the upper part or freight box of the car, and therefore needs no frame to sustain it on the wheels or trucks, which may be connected with it in any convenient manner.

The sides of the truck tank extend above the cover on either side, as shown at *i i*, in Figure 3. Between these side-pieces, *i i*, I lay on the corrugated cover *h* boards which form the floor of the box *k*, which is placed or framed above the truck tank to hold the dry freight. By this means there are longitudinal channels formed under the flooring-boards by the corrugations of the tank-cover; which channels being open at each end, as shown in Figures 1 & 3, serve for the free passage of air, and greatly assists in keeping down the temperature of the liquid in the tank, & carry off any gases which may escape, which, in the transportation of petroleum, is a matter of importance.

When a house or box, *k*, is used to cover the freight, it is placed on the truck tank along side of the side-pieces *i i*, & being firmly attached to the tank, helps to strengthen it.

The advantages of the mode hereinbefore described of constructing freight cars are so obvious as scarcely to need stating. The immense amount of oil and other liquids now transported in barrels, with great loss by leakage, and at a vast expenditure in the cost of barrels, and of their freight when returning empty, renders my invention very useful and important. The peculiar construction of my cars is also a great advantage, as the tank, forming the car-truss, and being no heavier than the ordinary car frame, causes no loss, even when empty, as the upper part of the car will carry as much freight as an ordinary freight-car. The placing of the tank partly below the level of the top of the wheels serves to steady the car when the tank is full, by lowering its centre of gravity, and relieves much of the strain of the wheels on the rails.

What I claim as my invention and desire to secure by letters patent is:

1st. Constructing railway freight cars (technically so called) with a covered tank or tanks for the transportation of liquids in bulk when any part of such tank or tanks is placed below the level of the top of the wheels of the car.

2. Constructing railway-truck tanks for transporting liquids in bulk in such a manner, substantially as hereinbefore described, as that the metallic parts of the tank itself shall serve the purpose of a truck frame.

3. Providing railway-truck tanks for transporting liquids in bulk with one or more contracted space or spaces in the upper part of the tank, of less horizontal area than the body of the tank, for the purpose of affording room for the expansion of the liquid and checking its surging motion, substantially as hereinbefore described.

4. Constructing freight cars with a tank or tanks for transporting liquids in bulk combined with a box or receptacle for the carriage of dry freight, substantially as herein before described.

5. The mode of ventilating combined railway-truck tanks and freight cars by means of air passages, substantially as and for the purposes hereinbefore set forth.

In testimony whereof the said Joel F. Keeler hath hereunto set his hand in the presence of—

JOEL F. KEELER.

Witnesses:
ALLEN C. BAKEWELL.
W. BAKEWELL.

(Here follows diagram marked page 64.)

65 The U. States Patent Office to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted J. F. Keeler, March 27th, 1866, No. 53451.

In testimony whereof I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-sixth day of March, in the year of our Lord one thousand eight hundred and sixty six, and of the Independence of the United States the ninetieth.

[SEAL.] T. C. THEAKER.

66 No. 53451.

The United States of America to all to whom these letters patent shall come:

Whereas Joel F. Keeler, of Pittsburg, Pennsylvania, has alleged that he has invented a new and useful improvement in portable tanks for oil, &c., which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said improvement; and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents signifying a desire of obtaining an exclusive property in the said improvement and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Joel F. Keeler, his heirs, administrators, or assigns, for the term of seventeen years from the twenty-seventh day of March, one thousand eight hundred and sixty-six, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Joel T. Keeler, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-seventh day of March, in the year of our Lord one thousand eight hundred and sixty-six, and of the Independence of the United States of America the ninetieth.

W. T. OTTO,
Acting Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

[L. S.] T. C. THEAKER,
Commissioner of Patents.

67 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Joel F. Keeler, of the city of Pittsburg, in the county of Alleghaney, and State of Pennsylvania, have invented a new and improved mode of constructing and using portable tanks for the transportation of liquids in bulk and other freight; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters or reference marked thereon.

The nature of my invention consists in providing closed tanks (when combined with some vehicle for transportation, such as railway cars, wagons, steamships or other vessels), with a hatchway or closely covered opening of sufficient size for the reception of ordinary freight (in addition to the ordinary manhole always made in such closed tanks), and also with an inlet pipe for the admission of steam for the purpose of cleansing the tank after the liquid transported in the tank shall have been drawn or pumped out. I also usually construct it with an outlet pipe for blowing out the vapor and impurities resulting from steaming.

68 To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. I construct my tanks in every known form and of every known material or combination thereof, but I usually prefer to make them of iron either as a part of the transporting vessel as seen at *a a*, or independently of the vessel or car, holding it firmly in place by any known mechanical means.

I provide them with the ordinary manhole and cover *b*, and in order to fit them for carrying liquids in bulk and for being cleansed by steam, after the liquids are withdrawn, and then reloaded with other freight, I also provide them with a steam inlet tube or pipe *d* and outlet pipe *c* in combination with a hatchway *h* and close cover *h'*, all of which are constructed, closed, and opened in the usual manner and by known mechanical means. In order to leave space for the expansion of liquids that are particularly effected by temperature, and at the same time preventing the liquid substance from surging by reason of the rolling or pitching of the vessel or car, I construct the tank with a double cover made up of an upper and lower plate with a space between sufficient for such expansion, the lower plate being perforated with small holes *g*, *g*, that permit the fluid in the tank to expand slowly through, but not to rush through suddenly. The tank is usually filled up to the lower

69 plate of the cover. When the car or vessel has reached its destination the liquid is either drawn or pumped out in the usual way.

In order to cleanse the tank of the liquid or its perfume I introduce steam either common or superheated air or heated air for the purpose of liquifying or vaporizing the residu'm*n* of the liquid and forcing it from the tank, which I do by means of the inlet and outlet pipes *d* & *c*.

The importance of my invention, especially to the transporters of petroleum, can hardly be overestimated. Cars have been constructed for carrying that article in bulk on land and vesselss for carrying it on water, but they have hitherto been unable to bring return freights with profit because such cars and vessels have not been adapted to bringing such return freights in the same space occupied by the outgoing petroleum. My invention remedies that defect by providing the means necessary

for cleansing the tank perfectly from even the odor of the petroleum, and also for receiving and discharging ordinary dry-freight.

I am aware that hatchways have been used from time immemorial in the construction of vessels, and that steam has been used for cleansing purposes. I do not therefore claim the hatchway or the steam pipe under all circumstances or for all uses.

70 What I do claim and desire to secure by letters patent of the United States are—

1st. The hatchway *h h'* in combination with the steam-pipe *d*, or their equivalents in the construction and use of portable tanks.

2nd. The hollow cover *f* constructed and used substantially in the manner and for the purposes described.

JOEL F. KEELER.

Witnesses:
IGN. HAHN.
TAS. SCHMITT.

Exd.—A. T.

(Here follows diagram, marked page 70.)

71 [65.]

The U. S. Patent Office to all persons to whom these presents shall come greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted Joel F. Keeler, dated January 10th, 1865, No. 45834, for improved mode of constructing railroad car trusses.

In testimony whereof, I, Ellis Spear, acting Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this thirteenth day of March, in the year of our Lord one thousand eight hundred and seventy-six, and of the Independence of the United States the one hundredth.

[SEAL.] ELLIS SPEAR,
Acting Commissioner.

72 No. 45834.

The United States of America to all to whom these letters patent shall come:

Whereas Joel F. Keeler, of Pittsburg, Pennsylvania, has alleged that he has invented a new and useful improved mode of constructing railroad car trusses, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said invention, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said invention, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Joel F. Keeler, his heirs, administrators, or assigns, for the term of seventeen years from the tenth day of January, one thousand eight hundred and sixty-

five, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said invention, a description whereof is given in the words of the said Joel F. Keeler, in the schedule hereto annexed, and is made part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the Patent Office has been hereto affixed.

Given under my hand, at the City of Washington, this tenth day of January, in the year of our Lord one thousand eight hundred and sixty-five, and of the Independence of the United States of America the eighty-ninth.

J. P. USHER,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.
[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

73 The schedule referred in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Joel F. Keeler, of Pittsburgh, in the county of Allegheny, in the State of Pennsylvania, have invented a new and improved mode of constructing railroad cars, fitting them for the transportation of liquids, without detracting from their capacity for storing and transporting other freight, and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked therein, like letters in the several figures referring to like parts.

The nature of my invention consists in constructing the bottom or truss of a railroad car of sheet iron, with suitable bulkheads, etc., and connecting with the trucks or running gear in such a manner that said bottom or truss will drop partly below the top of the wheels, and
74 between them, more especially near the middle of the car, thus affording space for holding a sufficient amount of liquids to nearly or quite freight the car, while having about the usual space in the car for other articles above the trap.

To enable others skilled in art to make and use my invention, I will proceed to describe its construction and operation. I construct my car in any of the known forms and modes (except as herein specially described as differing therefrom), and apply to them wheels and axles or trucks with two or more wheels, as I deem advisable, together with springs, bumpers, brakes, and other appendages of railroad cars, but in order to fit them for the transportation of liquids in bulk, without unfitting them for other freight, I make the bottoms of the bars of sheet-iron (either black or galvanized) and usual' of a semi-circular or ogee shape on the under side, as shown in Figs. I and
75 III, securing thereby the greatest lateral and perpendicular strength with space, and shape permitting the bottom of the bar to drop between the wheels in order to secure greater carrying capacity, both of space and strength, I usually make the middle of the bar bottom the deepest, as shown in Figs. I and II at *b b*. To increase this strength still further, I insert diaphragms or bulkheads at *c* and at *d*, the former longitudinally, the others crosswise. I also add the trusses E E, as needed.

The upper part of the truss, or what is usually the bar bottom, I make of sheet iron, corrugated longitudinally, which strengthens the truss and stiffens the floor. I also cover this corrugated floor with boards running

crosswise at pleasure. The corrugations are shown at *h h*. When a box, or house, K, is placed on the truss it is firmly attached to the truss and helps to strengthen it. The several compartments have holes to permit the contents when desired to flow together, or to be closed,
76 the contents of each kept separate; the holes at *g g*, with stop-cocks, tubes, &c., permit the contents to be drawn off readily, while more holes, *f f*, allow of speedy filling, clearing, &c., which are closed in the usual way.

The advantages of this construction are so obvious as scarcely to need stating.

The immense amount of oil and other liquids now transported in barrels, at a vast expenditure for the barrels, and a still greater loss in leakage, requires this or some similar invention to obviate them. The joints of this truss are not only lapped and riveted, but also soldered. When the iron is thick enough to permit it, they are caulked. Leakage, therefore, is provided against in every possible way.

What I claim and desire to secure by letters patent of the United States is the railway-car truss, constructed and used substantially in the in the manner, and for the purpose set forth.

77 JOEL F. KEELER.

Witnesses:
SAMUEL GRAHAM,
F. W. KENNEDY.
Ex'd C. C. W.

(Here follows diagram, marked page 77.)

78 The U. States Patent Office, to all persons to whom these presents shall come, greeting:

This is to certify that the annexed is a true copy from the records of this office of the letters patent granted S. J. Seely, May 21st, 1861, No. 32403.

In testimony whereof I, T. C. Theaker, Commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed this twenty-sixth day of June, in the year of our Lord one thousand eight hundred and sixty six, and of the Independence of the United States the ninetieth.

[SEAL.] T. C. THEAKER.

79 No. 1399. Whole No. 32403.

The United States of America to all to whom these letters patent shall come:

Whereas Samuel J. Seely, of Brooklyn, New York, has alleged that he has invented a new and useful improved construction of iron vessels, which he states has not been known or used before his application; has made oath that he is a citizen of the United States; that he does verily believe that he is the original and first inventor or discoverer of the said construction, and that the same hath not, to the best of his knowledge and belief, been previously known or used; has paid into the Treasury of the United States the sum of thirty dollars, and presented a petition to the Commissioner of Patents, signifying a desire of obtaining an exclusive property in the said construction, and praying that a patent may be granted for that purpose:

These are therefore to grant, according to law, to the said Samuel J. Seely, his heirs, administrators, or assigns, for the term of seventeen years from the twenty-first day of May, one thousand eight hundred and sixty-one, the full and exclusive right and liberty of making, con-

structing, using, and vending to others to be used, the said construction, a description whereof is given in the words of the said Samuel J. Seely, in the schedule hereunto annexed, and is made part of these presents.

In testimony whereof I have caused these letters to be made patent, and the seal of the Patent Office has been hereunto affixed.

Given under my hand, at the city of Washington, this twenty-first day of May, in the year of our Lord one thousand eight hundred and sixty-one, and of the Independence of the United States of America the eighty-fifth.

CALEB B. SMITH,
Secretary of the Interior.

Countersigned and sealed with the seal of the Patent Office.

[L. S.] D. P. HOLLOWAY,
Commissioner of Patents.

80 The schedule referred to in these letters patent and making part of the same.

To all whom it may concern:

Be it known that I, Samuel J. Seely, of Brooklyn, in the county of Kings, and State of New York, have invented certain new and useful improvements in the construction of iron vessels, and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings (representing my improvements applied to the construction of a canal-boat) and to the letters of reference marked thereon, in which figure 1 is a vertical section taken through the centre of the length of the boat. Figure 2 is a section, and figure 3 a perspective view of the side of the hull on an enlarged scale to show more clearly the construction and attachment of the duplicate plates.

The purposes and object of my invention is to produce the requisite degree of strength with the least possible weight of material in an iron vessel and it consists in forming the hull and deck or decks of the ves-
81 sel of two or more plates (or thicknesses) of corrugated iron, having the corrugations on one plate placed at a right angle to those of the other) but having in all cases the corrugations of the exterior or "planking" plates running longitudinally with the vessel), dispensing entirely with all framing and bracing now used to impart to the hull and decks the required degree of strength.

The use of iron for constructing vessels has greatly increased within the past few years, both in this country and abroad, for the reasons of the greater security given to the vessel from damage or loss by fire, the decreased weight and therefore decreased immersion of the vessel, and the increased capacity and greater endurance of it, but the application of iron has without exception followed in the beaten track of that of wood, "iron frames," "braces," "ceilings," and "planking," taking the place of wooden structures of the same kind, the "frames" have uniformly been used, the braces required in wooden vessels of similar size have been applied in the same position, and the "ceilings" and "planking" have followed their wooden types as nearly as possible. By my improvement I dispense entirely with the "frames" and braces heretofore uniformly used and depend entirely upon the greatly increased strength of the material used by me for the hull and deck or decks,
82 greater strength being imparted to the hull by increasing the thickness and weight of the plates used in the parts of the hull upon which the greatest amount of strain comes, to an amount equal to that of the weight of the frames and braces than would be imparted to it if the frames and braces were used.

A is a section of the hull of a vessel with a single deck, constructed of duplicate plates of iron corrugated as shown—the exterior or planking side B having its corrugations running longitudinally, and the interior or ceiling side C having its corrugations running vertically. These plates are bolted or riveted together at proper distances to hold them securely together, and the different plates constituting the outer and inner sides are caulked or otherwise made tight where they join together. The "planking" C has its corrugations running longitudinally, for the easier passage of the hull through the water, and, in case of a sea-going vessel, for imparting to the hull an extra amount of buoyancy through the waves striking into and against the corrugations, having a tendency to prevent the hull sinking or plunging into the sea to the degree that it would if the corrugations were placed vertically on the planking side, as if the planking were formed of plain plates. D is the deck formed of duplicate plates, the same as the hull to
83 impart to it a greater degree of strength, to bear a burden or direct strain or to resist a lateral strain, than if made of plain plates of iron, or if made of wood in the ordinary manner. The angle iron *a a* secured to the inside of the hull at each side beneath and above the deck, and also secured to the deck by proper bolts or rivets not only retain the deck in position and serve materially to strengthen the hull, but also serve as a water-way by the use of the upper one, to act as a conductor to carry the water off from the deck to the scuppers.

The immense increase of strength imparted to the iron used in the hull and deck of the vessel by corrugating the iron, as shown, is too well known to require further explanation; the advantage of duplicating the corrugated plates (as shown) to increase the strength of the hull and deck is equally well known, and therefore requiring no further notice.

In large vessels, where the requisite degree of strength might require the use of more than a pair of plates, as shown in the drawings, the additional plates would be applied to the inner side of the hull leaving the exterior or "planking" plates with their corrugations running
84 longitudinally, the second plates with their corrugations running vertically to the first, and the additional plates following in the same order.

The iron deck is covered by a light wooden deck to produce a plain surface, and the interior of the hull on the bottom may be covered similarly for the same purpose.

I do not claim the use and application of corrugated iron plates in or to be construction of vessels, or the application of duplicate corrugated plates, as shown, to the same purpose, but what I do claim as my invention and desire to secure by letters patent is—

The application of two or more series of iron plates to the construction of vessels corrugated and arranged as herein described for the purpose of imparting to the hull of the vessel the requisite degree of strength without the use of "frames" and "braces" when the outer or "planking" series of such plates is applied with its corrugations running longitudinally with the hull as herein set forth.

SAM'L J. SEELY.

Witnesses:
FRANCIS S. LOW.
WM. A. LIGHTALL.

(Here follows diagram, marked page 84.)

Supreme Court of the United States

No. 131.

JAMES DENSMORE, AMOS DENSMORE *et al.*

vs.

WILLIAM C. SCHOFIELD, JOHN ALEXANDER *et al.*

BRIEF FOR APPELLANTS.

Appeal from the Circuit Court of the United States for the Northern District of Ohio.

J. C. CLAYTON,
A. Q. KEASBEY,
Of Counsel with Appellants.

December, 1880.

R. O. Polkinhorn, Printer.

HOLBROOKS' STEAM PRINTERY, 11 Mechanic St., Newark, N. J.

No. 131.

Supreme Court of the United States.

BETWEEN

JAMES DENSMORE, AND ALS,

Appellants,

AND

WILLIAM C. SCOFIELD, AND ALS,

On Appeal from Circuit Court N. Dist. of Ohio.

BRIEF FOR APPELLANTS.

STATEMENT OF THE CASE.

The bill was filed for the infringement of Reissued Letters Patent, granted May 29, 1866, to James and Amos Densmore, for a new and useful improved oil-tank-car for carrying petroleum and other like substances in bulk, numbered 2,261.

The original patent was granted to the same parties April 10, 1866, and numbered 53,794.

The patentees assigned one-fifth, June 28, 1866, to George W. N. Yost, who is one of the complainants.

The answer denies the infringement and sets up as defences:

1. Prior use of the alleged invention for more than two years, with the consent and allowance of the plaintiffs.

2. That prior to the alleged invention, the same, and all material parts thereof, were patented in the following patents:

To John Scott, Jan. 20, 1863.
W. W. Horton, March 21, 1865.
G. W. Howard, Sept. 26, 1865.
R. C. Clyde, Feb. 11, 1862.
S. J. Seely, June 2, 1863.
J. F. Keeler, July 18, 1865.
D. Lott, August 1, 1865.
J. F. Keeler, March 27, 1866.

3. That the claims granted in the reissue were not warranted by the original patent, and were not for the same invention as in the original patent.

This was claimed in amended answer. (Record p. 41.)

4. That the letters patent are void for want of invention, the alleged invention being for nothing requiring any more ingenuity or skill than is possessed by an ordinary mechanic acquainted with the business to which the alleged invention appertains.

And the answer alleges that on Sept. 3, 1866, the plaintiffs commenced a suit at law in the United States Circuit Court for the Southern District of New York, against Snow and others—that the same defences were set up as here, and that a verdict was rendered for the defendants on the grounds of prior use and want of novelty.

By stipulation (record, p. 13), it was admitted that the plaintiffs were the owners of the Reissued Letters Patent, and that the defendants had used a large number of tank cars for transporting petroleum in bulk of the following construction, viz: "Two large slightly conical tanks made of wooden staves hooped, and of a diameter nearly equal to the width of the car, and of about four or five feet in height, secured to the platform of a 'flat car' or 'cattle car' by means of cleats nailed to the car, each tank being placed over one of the trucks, each of the said tanks having a man-hole on top and a faucet near the bottom and a capacity of forty or more barrels."

It was also stipulated (record, p. 13) that a suit was commenced September 3, 1866 by the patentees against Snow and others, which was tried before Judge Shipman and a jury, and argued by Mr. Keller for plaintiffs and Mr. Kimball for defendants and that the judge charged that there was great doubt as to whether the first two claims were not void for want of patentability, saying to the jury that if they thought the putting two water hogsheads on a wagon would be patentable, the plaintiffs might recover; and that the charge was contemptuous and unfavorable, and the jury, on brief consultation, found for the defendants, on which judgment was entered, and remains undisturbed.

The plaintiffs' proofs show substantially these facts.

ABSTRACT OF THE APPELLANTS' PROOFS.

(page 15.) That prior to the invention of the appellants, there was but one mode in use for shipping oil on railroads from the oil regions, and that was to put the petroleum in packages and put the packages on to or into railroad cars, and transport them thence to the place of destination. That these packages used were forty gallon casks, whisky barrels or casks having been first used for that purpose, but larger wine casks, tierces, hogsheads and other such packages were occasionally used.

(JAMES DENSMORE'S testimony, page 15): That in November, 1864, James Densmore and his partner—Mr. Daniel T. Watson—began the making of tanks for the purpose of combining them with cars to make tank cars, and shipped the first tank car loaded with petroleum the last week in May or forepart of June, 1865 (page 16.)

That in the summer and fall of 1864, James Densmore laid the invention before producers and shippers, and invited their coöperation. His application was refused and derided. That he and his partner—Mr. Watson—determined to try the experiment, and succeeded in obtaining help to put the tanks into practical use, and that as soon as they had made two trips, other parties began making tank cars for the Cleveland trade. Messrs. Yorst & Boan began making them; that within two or three months after these cars were put into use, these other parties had obtained,

mounted and made into tank cars one hundred cars, and used them in shipping petroleum; that the defendants organized the Cleveland Tank Line Co., and other parties also entered upon the same business, so that within a year and a half or two years from the time they first shipped in tank cars, there were a thousand to fifteen hundred tank cars made and in use; that the advantage of shipping petroleum by tank car was so great, that during the year 1867, and from that time since, at least nine-tenths or more of all petroleum shipped by railway has been shipped by tank cars, and since 1870 none was shipped otherwise (record, page 18.)

That in the early summer of 1866, the appellants organized the company known as the Oil Tank Co., which continued operations until the spring of 1867, and during that time used over two hundred tank cars made according to the specifications in the letters patent upon which the suit was founded; that that company was successful, and during the first seven months of its existence declared a dividend of about ninety-three thousand dollars, of which the whole was profits derived from the use of these cars solely in the business of transportation (record, page 22.)

DANIEL T. WATSON states (record, page 26) that up to the year 1865 the universal mode of transporting petroleum was in barrels and casks, and that in the winter of 1864 and 1865, Mr. Densmore and himself got up eight tanks to be attached to four platform cars for carrying oil in bulk, and that those were the first he ever saw or heard of, and (on page 27) that about eight months afterwards, other parties began to ship similar tank cars; that prior to May, 1865, all crude oil was carried in barrels, casks and hogsheads, but that at the beginning of 1868, a very small proportion was carried in barrels—not one-twentieth per cent.—and that tank cars of the construction described in the patent continued to carry the greatest portion of crude oil that was transported by railway; that about fifteen hundred of these tank cars came into use at one time, varying a little in capacity and size, but otherwise very similar to those made under the patent.

That the advantages of the tank car system were a great saving in freight, enabling them to carry more barrels of oil in the tanks and to save about one hundred pounds in wood (that being what the barrel weighed); that sixty barrels of oil in barrels was

the common car load, and that of a tank car from eighty-five to ninety barrels; that the cost of carrying the tank car was the same as that of the sixty barrels at first, but the railways subsequently charged more freight; that even after they charged more freight, the advantage was still with the tank car as it saved largely in leakage and in the expense of handling the oil on the creek and in New York; there was also a saving in returning tanks over returning barrels. In shipping barrels each barrel had to be filled on the creek from the storage tank, which involved considerable labor and wastage more than there was in filling the car tanks from the same storage tank; that there was an expense in loading the barrels on the cars on the creek, and coopering barrels on their return, and also in handling the oil in New York; that there was much less expense in handling it when shipped in the car tanks than there was when shipped in barrels; that the leakage out of a tank car load of oil was less than out of a car load of barrels; the leakage per barrel of oil shipped from Oil Creek to New York was from one to ten per cent.; the average leakage of good merchantable barrels was from two to three per cent.; the leakage from tanks was very small, not averaging one per cent.

Amos Densmore (page 29) confirms the statement as to the advantages of the tank-car, and states that in the spring of 1870 from one to two thousand tank-cars were in use, and that during the period of nearly four years, inclusive of the summer of 1866 and the spring of 1870, at least forty thousand car loads of oil were shipped by other parties than the patentees, at an advantage of more than thirty dollars per car load; and (on page 31) he says that one of the grounds of his estimate of the advantages derived from the use of tank-cars over barrels in shipping oil consisted in the fact that eighty barrels of oil shipped in tank-cars weigh not less than sixty barrels shipped in barrels, including packages, and another reason was that sixty barrels of oil shipped in barrels to New York, at two-and-a-half dollars per barrel (that being the price sometimes charged), comes to a hundred and fifty dollars, eighty barrels at a hundred and fifty dollars, or less than two dollars per barrel; and at this estimate the saving in a car load would be between forty and fifty dollars; and another reason was that the cooperage on sixty barrels would amount to at least twenty cents per barrel for each time they were taken to New York and returned, as he had been informed by persons who had

made a special business of shipping by barrels; that the leakage in shipping by barrels to New York average one to two gallons in each barrel, as he had been informed by those engaged in that business, but that the leakage in shipping by tank-cars, as he knew from experience, amounted to almost nothing, so that there would be a gain of a gallon per barrel in respect to leakages, and that as oil sells in New York and other markets from five to twenty-five cents per gallon, this would make a difference of from five to fifteen per car load.

The only evidence on the part of the defendants was that of Addison Hills, E. E. Flint, A. M. McGregor and John Andrews (record, pp. 34–40) and P. Metcalf (sup. record, p. 2.)

The substance of it was, that it has long been the usage and practice of railroad companies to place or distribute loads so that they should rest as far as practicable over the trucks.

That the defendants began in 1866 to use tank cars, employing wooden tanks about eight feet in diameter and six feet high, bound with iron, built with staves, and heads outside of the cars, and put into cattle cars after having taken out one end of the car, one being placed at each end and fastened by cleats or strips spiked to the bottom of the car, the diameter of the tanks being equal to the width of the car, and the tanks resting against both sides. That they had man holes, and covers made tight on the top of tanks. That the tanks could be removed from the car by good mechanics without injury to the car. That platform cars, as well as cattle cars, were used. That these cars were used till 1871, when they were superseded by the iron tank boiler shaped car now in use.

That in 1865 and the greater part of 1866 oil was shipped in barrels; after this in barrels and tank cars promiscuously, and finally in tank cars altogether.

That in the upper oil region no vessels larger than barrels were used before 1866. In the principal oil region they used large barrels or hogsheads.

That in 1863 and before and after, Preston Metcalf shipped large quantities of oil in old whaling casks holding from one and one-half to ten barrels each, which were sent forward, returned empty and forwarded again, and that his practice was to spike down cleats to prevent the casks from shifting; there being small and large casks in every shipment. (Sup. record, 2).

The defendants also offered in evidence the following letters patent:

JOHN SCOTT, January 20, 1863.

This is for a railroad car lined with sheet metal so as to produce an oil-tight box, for carrying petroleum by rail.

S. J. SEELEY, June 2, 1863.

This is for the iron car which superseded the Densmore patent in 1871, and is a railway car having its body composed of a corrugated or other sheet iron cylinder, with pipes, cocks and boxes as described.

R. C. GLYDE, February 11, 1862.

This is for the use of boats divided into compartments and covered with deck-heads for carrying petroleum in bulk.

W. W. HORTON, March 21, 1865.

This is for oil tanks both stationary and moveable, used successively to transport oil from the wells to the refinery in the manner elaborately set forth in the specifications. The moveable tanks are proposed to be "made of proper size to occupy an ordinary platform car, flat on the bottom so that they can be readily set on an ordinary car, and as readily removed."

GEO. W. HOWARD, September 26, 1865.

This is for a closed tank for transporting or storing oils—applied to cars and also to ships.

Applied to cars it is made of the length and width of the car frame, or it may be varied in dimensions to be used on common wagons.

The chief point of the claim is certain contrivances for accommodating the expansion and contraction of oils in closed vessels.

J. F. KEELER, July 18, 1865. Reissue.

This is for an improvement designed to adapt freight cars to the carrying of liquid freight in bulk, and dry freight of any description in the same car.

There are five claims. (See sup. record, p. 23, and drawings for fuller explanation.)

KEELER, ~~reissue,~~ March 27, 1866.

This is only for hatchway in combination with steam pipe, and a hollow cover in the use of portable tanks.

D. Lott.

~~KEELER, reissue,~~ August 1, 1865. A revolving car.

(Not found or printed.)

SAM'L J. SEELEY, May 21, 1861.

This is for the application of two or more series of iron plates to the construction of vessels for imparting strength to the hull.

It seems to have no relation whatever to the subject of tank cars.

ASSIGNMENT OF ERROR.

No opinion was given by the judge before whom the case was tried. A simple decree was entered, dismissing the bill with costs. (Record, page 41.)

It is, therefore, impossible to determine upon what ground the court founded its decree of dismissal.

We claim that the court erred; *first*, in not holding that the patent was good and valid and the title in the appellants; and *second*, in not holding that the defendants have infringed.

ARGUMENT.

I.—The Construction of the Patent.

The appellants' original patent and the reissue are fully stated and the construction thereof given by Mr. Justice Swayne, in the case of Densmore *vs.* Scofield and al., 4th Fisher, 148.

This was an action at law between the same parties, in which a verdict was given for the defendants, and set aside in the opinion referred to and a new trial granted.

[A copy of this opinion is appended to this brief.]

The nature of the appellants' invention is fully stated in the reissue in the following words:

"The nature of our invention consists in combining two large, light, tight, firm, stout tanks with an ordinary railway car, making the tank practically a part of the car, so as to carry the desired substance in bulk in the car itself, or in a permanent fixture or part thereof, instead of in barrels, casks, hogsheads, tierces, or other movable vessels or packages, as is now universally done on railway cars, and thereby save carrying the weight of the barrels, casks, hogsheads, tierces, or other movable vessels or packages."

The infringement is charged upon ~~the first of~~ the following claims:

First. The two tanks B, B, (or their equivalent) when constructed and operating in combination with an ordinary railway car, substantially as, and for the purposes, set forth.

Second. The two tanks B, B, (or their equivalent) when set directly (or nearly so) over the car-trucks, and when constructed and operating in combination with an ordinary railway car, substantially as, and for the purposes, set forth.

The third and fourth claims relate to the specific mode of combining tanks with the car, and to the arrangement of the steps to obtain access to the man-holes.

The car constructed by the defendants (see stipulation record, page 13,) consisted in the use of two tanks combined with an ordinary railway car by means of cleats.

It is not contended that the defendants used these specific frames C, C, C, C, nor the bolts 1, 2, 3, and 4, in effecting their combination.

A perusal of the original and reissued letters patent shows that the drawings are identical, and that the only substantial distinction between the two is to be found in the claim.

The claim in the original patent being an inartificial claim for a combination and arrangement of all the parts, whereas in the reissue the same invention is claimed in four claims or counts. (See above referred to opinion of Justice Swayne.)

In the opinion of Mr. Justice Swayne, above referred to, it is held that the first and second claims are for substantially the same thing and that the two claims intend to claim and do claim a combination of two tanks with a railroad car; that it was a combination to the limited extent only, described by him, being a combination of tanks, or the equivalent of tanks, with cars; which tanks rest over one of the trucks of the car; that the third and fourth claims are separate and distinct claims for other things to be used with the separate and independent combination, described in the first and second claim, and upon this ground he ordered a new trial for the reason that on the trial below, the Court held that inasmuch as the defendants used instrumentalities for fastening the tanks to the trucks different from those described by the patent in the third claim the plaintiffs could not recover.

And the result of the decision of Mr. Justice Swayne was that if the combination described in the first and second claim was infringed by the defendants and was patentable in itself a recovery could be had.

This decision seems to settle all questions concerning the construction of the patent and the validity of the reissue in its relations to the original patent, and render unnecessary any discussion upon that subject.

Three
~~Two~~ questions therefore remain for this court.

I. Did the defendants infringe?
II. Was the invention anticipated by others?
III. Is the patent void for want of patentable novelty?

II. The Densmore invention was made in the summer of 1864. See Record p. 17. And anticipated Keeler, Howard, Horton and Lott.

Inspection of these patents, and comparison with appellant's patent, clearly show that in none of them are to be found the Densmore invention.

We do not understand that the appelles urge this defence.

It was earnestly and successfully contended by the defendants that this invention, although it produced instantly a complete revolution in the vast business of transporting petroleum, was nevertheless so simple and self-evident as to exclude the idea of invention.

We suppose that it was upon this ground that the court below dismissed the bill without furnishing an opinion——as we know it was upon this ground that the court in New York contemptuously charged the jury to find a verdict against us.

We respectfully submit that this was not a valid ground for refusing relief—

That the patent itself is *prima facie* evidence of the validity of the grant.

Potts v. Hall, 2 Blatch., 229.
Potter v. Holland, 1 Fisher, 388.
Bates v. Coe, 98 U. S., 31.
Winans v. Erie R. R. Co., 1 Fisher, 213.

That the defence must make out their case on this point beyond all reasonable doubt.

That however simple the contrivance, however obvious to persons engaged in the pursuit, after it has once been pointed out—and however old the parts or instrumentalities combined—yet if the plaintiffs did so combine old parts in a new way as to

produce a machine or implement which caused a revolution in the business, and led to the most beneficial results, then the law presumes that he has something that is patentable and gives him its protection.

The principles upon which the law acts in this particular are well stated in the following cases, from which we furnish extracts only by way of illustration. Similar expressions may of course be found scattered through the patent cases, but these are enough to show the liberal spirit in which we claim this invention ought to be viewed.

Clark Steam Co. v. Copeland, 2 Fish., 221.

SHIPMAN, J.

Old instruments placed in a new and different organization, producing in such new organization different results, or the same results by a new and different mode of operation, do not prevent such newly organized mechanism from being patentable.

With regard to the degree of mental labor and inventive skill required in the work of invention, the law has no nice or rigid standard. There must be *some* inventive skill exercised but the degree of that skill is not material.

It often happens that the whole atmosphere of inventive thought is quickened with the life of an approaching discovery, and many lives of investigation and experiment approach toward the point but do not quite reach it—when at last some mind by a happy thought, supplies some new element or instrument, or mode of organization, and instantly gives birth to the organized idea.

Roberts v. Dickey, 4 Fish, 532.

STRONG, J.

Increasing production of oil wells by fracturing the rock by means of explosives at the foot of well.

"It was a process for combining instrumentalities before known but not employed together to accomplish a new and useful result It is not to be doubted that a novel process or method of operation that amounts to a successful application of known things to a practical use is patentable as an art There are many cases where the materiality of an invention, whether it be a machine or a process, can be judged of only by its effect on

the result, and this effect is tested by the actual improvement in the process of producing an article, or in the article itself introduced by the alleged invention.

The utility of the change, as ascertained by its consequences, is the real practical test of the sufficiency of the invention. The existence of the one may be presumed on proof of the existence of the other.

Whenever the utility is proved to exist in any great degree, a sufficiency of invention to support the patent must be presumed."

Webster's pat. cases, 30.

Woodward v. Densmore, 4 Fish, 163.

GILES, J.

Even if the elements are unchanged, yet if with one arrangement they are incompetent to an end for which a different arrangement makes them competent, such new arrangement becomes patentable, unless it is such as would naturally suggest itself to persons skilled in the art to which the subject makes it akin.

Roberts v. Dickey, 4 Fish, 532.

Strong, J.—Increasing production of oil wells.

Wintermute v. Redington, 1 Fish, 239.

Where any new contrivances, combinations or arrangements are made use of in machinery, although the chief agents are well-known, those contrivances, combinations or arrangements may constitute a new principle and then the application or practice will necessarily be new also.

And in such a case the new or improved *method* of producing a useful result or effect is as much the subject of a patent as an entire new machine.

Potter v. Holland, 1 Fish, 382.

(Sewing machine.)

"The patent is *prima facie* evidence that what is granted did require invention. The validity of the grant is not to be determined by the amount of invention that was required.

If the device is new; if it is useful; if it had not been known before, there is a sufficient amount of invention to authorize a patent.

Curtis on Patents, 5.

Middletown Tool Co. v. Judd, 3 Fish, 141.

SHIPMAN, J.

Whenever a change or device is new and accomplishes beneficial results courts look with favor on it. The law in such cases has no nice standard by which to gauge the mental power or inventive genius brought into play in originating the new device.

A lucky casual thought involving a comparatively trifling change often produces decided and useful results, and though it be the fruit of a very small amount of inventive skill the law protects it as well as if it had been brought forth after a lifetime devoted to the profoundest thought and the most ingenious experiment.

(This was merely a patent for locating the spring of a snap hook so as to act on points intermediate between the hinge and the hook proper.)

Magic Ruffle Co. v. Douglass, 2 Fish., 331

"A subject matter to be patentable must require invention, but it is not necessarily the result of long and painful study, or embodied alone in complex mechanism. A single flash of thought may reveal to the mind of an inventor the new idea, and a frail and simple contrivance may embody it."

Woodman v. Stimson, 3 Fish, 98.

LOWELL, J.

The true test of invention is not whether an ordinary mechanic can make the combination, but whether he would make the combination without suggestion, by means of his ordinary knowledge.

If the plaintiff has combined old parts in a new way so that he gets a machine which operates differently and produces a different result or kind, then the law presumes that he has something that is patentable.

(Improved machine for ornamenting leather.)

Morton v. N. Y. Eye Infirmary, 2 Fish., 320.

(Anæsthetic case.)

SHIPMAN, J.

The principles on which the law of patents is founded are fixed and uninfluenced by shades of comparative merit. They secure to the inventor a monopoly in the manufacture, use and

sale of very humble contrivances, of limited usefulness, the fruits of indifferent skill and trifling sagacity, as well as those grander products of his genius which confer renown on himself and extensive and lasting benefits on society. But they are adequate to the protection of every discovery by securing its exclusive control to the explorer to whose eye it may be first disclosed.

Upon the principles stated in ~~this~~ these cases and upon the proofs of the plaintiffs, we insist that this patent was valid, and an infringement of it having been admitted, an account of profits and damages should have been ordered.

The case rests upon principles similar to those established in the case of Winans vs. Denmead, 15 Howard, 545.

In that case, the plaintiffs' patent was for the making the body of a burden car in the form of a frustum of a cone whereby certain mechanical principles were introduced and made operative, and a new and useful result produced.

The defendants made their cars not in the form of a frustum of a cone, or in a circular shape, but in an octagonal shape, approaching the cylindrical sufficiently to accomplish the results reached by that shape, though not quite in an equal degree. It was insisted that making coal cars in such a shape was not an infringement of the plaintiffs' patent, which was only for the frustum of a cone.

It was held by Mr. Justice Curtis that the substance of the plaintiffs' patent was a new mode of operation, by means of which a new result is obtained. It is this new mode of operation which gives it the character of an invention, and entitles the inventor to a patent, and this new mode of operation is in view of the patent law—the thing entitled to protection—and that the only question in the case was whether the plaintiff, in his specification, had restricted his claim to one particular geometrical form. It was held that he had not done so because the presumption was that the patentee having the right to cover and protect the whole of his invention, he intended to do so.

And secondly, because the specifications should be construed liberally to promote the progress of the useful arts, and allow inventors to retain to their own use not anything which is a matter of common right, but what they themselves have created.

It was held, also, that patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical mode of action not previously existing in the machine, and so securing the new or improved result.

It was therefore held that although the patentee had described no form of frustum of a cone, his patent covered all such variations in form as substantially embodied his mode of operation, and thereby attained the same kind of result.

In Winans v. The New York & Erie Railway Company, 21 How., 88, the question was as to Winans' patent for improvement in the construction of railway cars, and the patent was sustained.

The substantial principle, of which the placing of the wheels under the cars, four being placed in pairs near to each other, at each end of the car, by reason of which location of the wheels the great difficulty in running cars at high speed was put to an end.

See also the case of Winans v. Troy Railroad, 2 Blatchford, 279.

This case does not come within the scope of the recent cases in which this court has held patents void for want of patentable novelty.

It is wholly unlike in its facts, and in the important results to which the invention led to the case of The Glue Co. v. Upton, 97 U. S., 3, where the only improvement consisted in communicating glue to particles of small size, instead of leaving it in angular flakes, or to the case of Reckendorfer v. Faber, 92 U. S., 347, where the only improvement consisted in placing a piece of india rubber in the end of an ordinary lead pencil; or to the case of Brown v. Piper, 91 U. S., which was merely the application of an old process to a new subject; or to Terhune v. Phillips, 99 U. S., 592, which held that to substitute metal for wood in corner sockets for show cases was not patentable.

Indeed upon the principles stated in these cases, and especially in the lead pencil case, this patent ought to be sustained.

In that case, it was held that "a combination to be patentable

must produce a different force, effect or result in the combined forces or processes from that given by their separate parts. There must be a new result produced by their union."

Here these two conditions are fully met.

The new combination did produce a most important result, and one wholly different from that which the old parts produced as used separately.

Their union, in the manner pointed out by the patent, instantly and completely changed the whole business, and its advantages were so great that the infringement of the rights of the patentee were universal in the limited region where his invention was valuable.

He was the first to point the way to these great results, and however simple was the nature of the invention, he ought to be protected in the enjoyment of the fruits of it.

He has thus far been deprived of them, and can only have them restored by the reversal of this decree.

December 7, 1880.

J. C. CLAYTON,
A. Q. KEASBEY.
Of Counsel with Appellants.

Reported in 4 Fish, Pat. Case,

JAMES DENSMORE AND AMOS DENSMORE

vs.

WILLIAM C. SCOFIELD, ET AL.

If an alleged infringer uses less than all of the elements of a combination, and substitutes something for the part which he omits, unless the substitute is a mere mechanical equivalent, there is no legal liability.

Undoubtedly, independent, separable and separate things, provided they relate to the same subject, may be separately claimed in the same patent.

A combination complete in itself and more or less extensive, is in the eye of

the law, so far as its patentable quality is concerned, as much an identity and separate thing as if it were not a combination, but a single thing.

Where a patent contained a claim for "two tanks B, B, or their equivalent, when constructed and operating in combination with an ordinary railway car," and, also, a claim for "the frames C, C, C, C, the bolts 1, 2, 3, 4, and the cleats H, H, H, H, when constructed and operating, in combination with tanks B, B, and an ordinary railway car:" *Held*, that although both of these claims were for combinations, yet they were for combinations separate in their nature, and capable, if desired, of separate use.

It is error to say that a patent of that kind is a unit, and that all the parts, including frames, bolts, and cleats, must be used in order to infringe either claim.

(Before SWAYNE and SHERMAN, JJ., Northern District of Ohio, November, 1868.)

This was a motion for a new trial, in an action on the case, brought to recover damages for the infringement of letters patent for an "improved car for transporting petroleum," granted to plaintiffs April 10, 1866, and reissued May 29, 1866. The case was tried in February, 1867, and resulted, under the charge of the court, in a verdict for the defendants. The grounds upon which the motion for a new trial was based, the description of the invention, and the claims of the original and reissued patents, will be found in the opinion.

J. C. CLAYTON and S. J. ANDREWS, for plaintiffs.

RANNEY & BOLTON, for defendants.

SWAYNE, J.

This is a motion for a new trial, upon the ground that in the charge to the jury, the specifications of the patent were wrongly construed in a material particular by the court, and the question of the propriety of the instructions given comes before us for review, and is the only question to be considered.

The entire charge is in writing, and is a very clear and comprehensive view of the subject before the jury. The particular part of the charge, to which exception is taken, is this: 'On the part of the plaintiffs, it is claimed that their patent consists in securing two tanks upon a common railway car over its trucks, for the purpose of carrying oil in bulk.' The defendants claim that 'the patent consists of the car with tanks fastened to it in the mode described in the specification, and for the same purpose.' The only difference between them is in that that refers to the fastening of the tanks to the car. Without going into a lengthened argument, suffice it to say, that in my judgment the

true construction of the letters patent is that the patent consists of the railway car with two tanks placed over the trucks, and secured and fastened to the platform substantially similar and in the way described in the specification. *That a patent of this kind is a unit*, and that all its parts are material, viz: the railway car, the two tanks, and the fastening. The question is then directly raised whether the cleats used by the defendants in their machine for fastening the tanks to the platform are substantially similar to the frame-work, rods, and bolts described in plaintiff's patent."

The effect of that instruction on the point of law was, that the specifications comprised, as it were, one thing, an entirety; that the patent was for a combination; that combination not consisting of several separate and distinct parts of patentable and independent things, but a combination consisting of all the parts united. So that the well-known rule of law upon the subject applied that one using any particular part of one entire instrument or machine, would not be a violator of the rights secured to a plaintiff by his patent; and that if only one part, or a portion of this combination were used by the defendants—if the infringement complained of by the plaintiffs consisted in that, and that alone—then there could be no recovery; that there was no patent except for the entire combination, and that if the defendants were guilty of any infringement, it was an infringement upon the separate parts of the patent and not upon the entire combination.

The effect of this instruction upon the verdict was necessarily fatal to the cause of the plaintiffs, and a verdict was accordingly rendered for the defendants.

The correctness of this instruction, which was the turning point of the case, is now before us for re-examination, and the question is, as has already been said: Is this a patent for a united and single combination, made up of several parts, indeed, but still a unit; or is it a patent for several distinct things which may or may not be used together, and which, as separate and distinct claims, the patentee claims to cover by his patent?

In the examination of this subject, in order to avail ourselves of all the light accessible to us, it will be useful to advert to the patent issed to these plaintiffs, the patentees, April 10, 1866, which was their first patent upon the subject. That patent describes at length and with clearness in its specifications the

same things, no more, no less than are described in the letters patent of May following, which is the reissued patent. After a full description of the several parts, which the plaintiffs claim as their invention, the summary proceeds as follows:

"What we claim as our invention and desire to secure by letters patent, are the two tanks B, B, attached to the platform of a car A, A, by means of the frame work C, C, C, C, and C′, C′, C′, C′, together with the bolts, 1, 2, 3, 4, and 1′, 2′, 3′, 4′, directly over the trucks, when the same are constructed in the combination as hereinbefore described, and for the purpose set forth hereinbefore, or any other mechanical construction substantially the same and which will produce the same result."

Now in this patent and in this summary of the claim or claims of the patentees, one general combination is described. There is no separate claim, and there is no attempt to make a separate claim—nothing which looks in that direction, in respect to the separate parts of which the general united combination is made up. Upon this patent undoubtedly the law arising would be as it is laid down in numerous cases, that where a patent is obtained as one combination of a number of parts which in themselves are not new, there is no infringement, in the eye of the law, of the right secured by such a patent unless the entire combination is used. If the alleged infringer uses less than all of the combination and nothing else, he is not liable. If he uses less than all and substitutes something for the part omitted different from that which he omits and which answers the same purpose, unless the substitute be a mere mechanical equivalent used for the combination, then for the reasons I have stated, and according to the rule of law as well established on the subject, there is no legal liability.

Such undoubtedly would be the rule arising upon this original patent. But that original patent was surrendered and a reissued patent was taken out by the patentees in May of the same year. That patent is also in terms for an improved car for transporting petroleum, as was the original patent. The description contained in the specification is stated at length, as follows:

"On the platform of an ordinary railway car A, A, erect two large, light, tight, firm, stout tanks B, B, of wood-staves, hoops, or sheet-iron united and caulked, or of other material, and put each tank directly over one of the trucks, so that the strain of

the weight of the load will be upon those parts of the car that are stronger and better able to bear it. On the top of each tank put a frame of four bars, C, C, C, C, through the corners of the frame, close to and outside of the tank, and down through the platform of the car, pass the bolts 1, 2, 3, 4; on the ends of the bolts, above the frame and below the platform, put screws, and nuts, and washers, and fasten and press the tanks down upon the car firmly, and by means of the frame, and bolts, and screws, besides attaching and fastening the tank and car together, the frame and bolts will act as guys or braces and tend to prevent any shock or jog from the swaying of the car. Upon the platform, close to the outside and bottom of the tank, bolt the cleats or steps H, H, H, H, to keep the tank firmly in its place and prevent any jar or moving from any sudden stopping or starting of the car. In the top head of each tank make a man-hole through which to pour the substance to be carried. Also, for a man to get into the tank for any purpose. Around the man-hole, put a casing, and over the casing and man hole put a man-head or cover D to prevent rain or snow, or any thing from leaking or falling into the tank. At the bottom of each tank put in a faucet E by which to draw off the contents. Up the sides of each tank, next the end of the car, put the steps F, to enable one to get on and off the tank readily. And across from one tank to the other, put a run-way G, to enable brakemen and others to pass over the car with facility."

So far the specifications are nearly *verbatim* with the original patent. Then it proceeds:

"The nature of our invention consists in combining two large, light, tight, firm, stout tanks with an ordinary railroad car, and making the tanks practically a part of the car so as to carry the desired substance in bulk in the car itself, or in a permanent fixture or part thereof, instead of in barrels, casks, hogsheads, tierces, or other movable vessels, as is now universally done on railway cars, and thereby saves the carrying the barrels, casks, tierces, hogsheads, or other movable packages."

So far, this is *verbatim* the description in the original patent, and, if the specification stopped there, the legal result would be the same as in the case of the original patent. But it proceeds further; let us see if the further claims affect this legal result.

"What we claim as our invention, and desire to secure by letters patent, are: First. The two tanks, B, B, or their equiva-

lent, when constructed and operating in combination with an ordinary railway car substantially as and for the purposes set forth. Second. The two tanks, B, B, or their equivalent, when set directly, or nearly so, over the car-trucks, and when constructed and operating in combination with an ordinary railway car, substantially as, and for the purposes, set forth."

Viewing these two claims as a summary, in the light of the preceding description—and the whole instrument must be construed by its entire language—viewing these two claims in this light, it seems to me to be very clear that they mean substantially the same thing. One goes a little more into detail than the other, but in the view which I take of their proper construction, upon the face of the paper, my conclusion is that they mean, as I have remarked, substantially the same thing, and that the two claims intend to claim, and do claim a combination of two tanks with a railway car, each tank put over one of the trucks; or if the combination of the tanks with the car be too broad, it is not too broad in the light of the obvious meaning of this claim—that the tanks may be used in this way applied and made fixtures to the car; or the vessel used to hold the oil may be constructed originally with the car, and in the language oi the prior part of the specification "made a part of the car." The difference is immaterial, and one would be equivalent to the other.

Here again, in my judgment, is a combination claim, a combination to the limited extent only to which I have adverted in giving this construction. It is a combination of the tanks, or the equivalent of tanks, with the car, each tank resting over one of the trucks of the car.

Then comes the third claim:

"Third. The frames C, C, C, C, the bolts 1, 2, 3, and 4, and the cleats H, H, H, H, when constructed and operating in combination with tanks B, B, and an ordinary railway car, substantially as, and for tne purposes, set forth."

In my judgment this is another separate, distinct, and independent claim for a combination—a combination to be made with the prior combination made by the first and second claims, and which first combination has been already sufficiently considered.

The second claim is for a particular instrumentality. This third claim is substantially distinct, or it is to be used in combination with the prior combination, if used at all.

Then comes the fourth claim:

"Fourth. The steps F, F, the man-holes and the man heads D, D, the faucets E, E, and the run-way G, when constructed and arranged in combination with tanks B, B, and an ordinary railway car substantially as herein set forth and described."

In my judgment, this is for another instrumentality to be used in combination with the first one described.

To speak more specifically of the claims in this patent, the proper construction of the claims is, that the two first claims are for a combination of a car and tanks. The third claim is for another and distinct, separate, and separable thing, to be used with the prior combination.

Then the fourth claim for the steps, etc., is to be used also in combination with the first combination as expressed in the first and second claims.

Now, it is true, in the view which I take of this part of the patent, that these are combinations, but separate in their nature, and may be used separately; and it was the meaning of the patent or of the patentees in the specification that they should be separated, or they might be separately used, if any one desired to so use them.

Now, undoubtedly, independent things, separable and separate things, where any combination arises, provided they be cognate, relate to the same invention and have relation to the same subject, the same object to be accomplished; undoubtedly these separate claims can be made in the same patent. If they have no such tie of connection as I have mentioned; if they are for separate and entirely different things, then the patent would be void because it attempted to unite what can not be united; but if they be connected by a common tie, a common object or purpose, then undoubtedly these different claims can be united in one and the same patent. So far as I am advised, an objection, such as that adopted in this case, has never been sustained, founded upon a patent of this character.

Now, here, as I have remarked, there are combinations in this case, and the patent is for such combinations throughout. It claims nothing new from the beginning to the end. But un-

doubtedly there may be separate combinations and each separate combination may or may not all be covered by the same patent, as there may be separate and several things in the combination all covered by the same patent. When there is a combination complete in itself, more or less extensive, it is in the eye of the law, so far as its patentable quality is concerned, as much an identity and separate thing as if it were not a combination, but a single thing independent and complete in itself, and having no element of combination in it.

Then I hold that the first and second claims, in the summary of this patent, are for such a combination, and there they stop.

Then there is the third claim to be used in combination with the prior and independent combination; and then there is the fourth claim, still relating to the other claims, and also for old things, to be used with the separate and independent combination described in the first and second claims.

Now, if this construction of the patent be correct, an infringer might be guilty of an infringement of the combination of the tanks with the car, although he did not use the frame-work described in the third claim, nor the steps described in the fourth.

This, after the closest investigation I have been able to give the subject, and I have examined it with a good deal of care, is the conclusion to which I have been constrained to come.

Now, if this were the proper construction of the patent, then there would be still another branch of the case with respect to the question of novelty and utility; but that would be a question exclusively for the jury, and it may be that here the testimony showed that there were no such elements of invention in the subject as are indispensable—as would be requisite—in the patent law.

But however clear that may have been, that was a conclusion for the jury. It was a question upon which the plaintiffs had a right to the benefit of an investigation before the jury—of course under the enlightened instruction of the court. The construction of the patent given in this case below, as I understand it, in effect withdrew this question entirely from the action of the jury.

However that might have been, under that instruction, it seems to me very clear that there were questions—the questions I have mentioned—which should have been submitted to the jury.

The effect of the claim for an independent combination, as

made in the first and second claims of the patent, the legal presumption flowing from such a state of the case, is, that the plaintiffs, however clear the evidence may have been against them upon the points of utility and novelty, may have sustained prejudice, and if that be so, there is but one step further, and that is, the verdict must be set aside.

The verdict will be set aside, a new trial granted, and costs will abide the result.

SUPREME COURT OF THE U.S.
FILED
DEC 10 1880
JAMES R. MACKENZIE, CLERK

Supreme Court of the United States

JAMES DENSMORE,
And Others.
vs.
WILLIAM C. SCOFIELD,
And Others.

IN EQUITY.
No. 131.

BRIEF FOR APPELEES.

GEO. WILLEY,
Counsel for Defendants
Appelees.

Supreme Court of the United States.

JAMES DENSMORE
and others.
vs
WILLIAM C. SCOFIELD,
and others.

In Equity
No. 131.

BRIEF FOR APPELLEES.

It appears on page 41 of the Record, that the complainants Bill was dismissed by the Circuit Court on full consideration of the testimony and the arguments of counsel, but it does not appear that any formal opinion was filed or pronounced. We shall endeavor then, to reproduce the case of the appellees as there presented, and to show that on either of several grounds the action of the Court below was well advised, and the bill properly dismissed.

The Original Letters Patent were granted to James and Amos Densmore, April 10th 1866 (Amendment to Record page 3.) They are for a new and useful improved car for transporting petroleum. The construction and operation are described in the specification and drawings, and all the parts are claimed in combination in a single claim. We have here a platform car, two tanks to be set upon it, a frame work C. C. C. C. with a system of bolts 1, 2, 3, 4,

a man hole and faucet, the steps or ladder F, up the side of each tank, and a run-way G to enable a person to pass from one end of the car to the other. It might be granted that here was a structure, taking the various elements in combination, which presented some claim to originality and invention, and had this original Patent been abided by, and the defendants been found making or using this combination, they might have occupied a different position from that they now hold before the Court.

But the patentees presently discovered that a prominent part of their combination, to wit the bolts and frame work were not so readily or cheaply applied as ordinary cleats, and they abandoned them. (Testimony of Complainant James Densmore, page 16,) and it does not appear that such frame work and bolts were ever used thereafter by any one. They also found or saw that a shipper loading two tanks into a cattle car, in the ordinary way of loading large vessels into such a car, would dispense with the bolts and frames, and the steps and the run-way and the ordinary platform car itself, indeed with all the elements of their combination except two tanks, and these were confessedly old. Hence the necessity as they thought for a reissue and the division of their one claim into four claims, which claims, or rather the first two which are the only ones it is claimed we had ever used, we shall respectfully contend are void for several reasons.

First, we submit that the first two claims of the Reissue are void because they are not in law authorized by anything in the original Patent.

A comparison of the Reissue with the original Patent, and application of the doctrines laid down by this Court

in Gill v. Wells 22 Wallace, 1 will, we submit, maintain this proposition.

Russell vs. Dodge, 3. Otto 460-3.
Powder Co. vs. Powder Works 8. Otto 126-135.

Does the Original Patent, using the language of the first authority, (page 27) contain any suggestion, indication or intimation, that the original patentees made any other invention to accomplish the described functions than the one which includes the whole of the described ingredients? We have already partially stated the original patent (Amendment to Record pege 3) and we ask a careful examination of it by the Court to see whether we are not right in our claim that it contains no intimation, suggestion, or indication, of any other thing than the precise combination claimed,and further whether it does not almost in term affirmatively preclude the idea that the patentee had any other thing in his mind as a ground of claimed invention than this entire combination.

Reading then from the specification of the original patent.

"The nature of our invention consists in combining two large light tight tanks of iron or wood or other material with the platform of a common railway flat freight car making them practically a part of the car so as to carry the desired substance in bulk instead of in barrels, casks &c. and thereby save carrying the weight of said barrels, casks &c."

Then follows the description of the construction and operation of the invention involving all the apparatus shown in the drawing.

Then follows the claim embodying all the ingrediants

of the structure "when the same are constructed in the combination as herein before described."

Then follows a disclaimer of any one part, and expressly limiting the claim to the combination.

Now then looking at the Reissue in four claims, and particularly at the first two claims in the reissue, we would ask what intimation is there in the original patent that the simple combining of two tanks with a car without any of the other ingredients of the original combination was an invention of the patentees.

Next we respectfully ask the attention of the Court to a remarkable departure in the reissue from the *kind* of car limited in the original patent, for in the original patent we find that the tanks are to be combined with the platform of a common railway flat freight car. The drawings show a flat platform car and no other. All the appliances, consisting of frames and bolts to secure the tanks on an open platform and the ladders and run-ways are adapted to such a car and to no other. The reissue substitutes, both in the description and in the claims, the broader words, "an ordinary railway car."

Now there is a wide difference between employing a flat freight car, dispensing with the expense and weight of the superstructure such as belongs to a cattle car such as defendants use,—a wide difference between the two kinds of cars in this connection.

To construct a car employing the plan of a cheap platform car, fastening upon it its tanks by the use of frames, bolts, etc., which should dispense with the necessity of sides and roof, necessary parts of the cattle cars into which we loaded our tanks is a different thing from what we used, still they were both ordinary railway cars,

but the one thing might bossibly have been patentable when the other would not be. Not only does the original patent specify a common flat freight car accompanied by drawings which show such a car and appliances adaptable only to such a car, but the testimony of Watson page 28, answer 28, adverts to the advantage that the tanks and their fixtures did not weigh as much as the rack that covered the barrels on a rack car.

Now it would seem that one of two results must follow, either that here is an unwarranted enlargement in the description of the kind of cars to be employed, in which case the reissue would be void, or else that the term "ordinary railway car," referring as it does to the drawing, is limited by it and still means an ordinary railway platform flat freight car, in which case defendants would not infringe, never having used such cars.

We will not enlarge upon these points, but submit them here to the determination of the Court on inspection and comparison of the original and reissue.

It should be suggested here that the comparison might be easier if the complainants had procured to be carried into the record a full copy of the reissue on which they claim. There appears to be nothing but the schedule attached to their bill of complaint without the patent or the drawings, and the schedule as printed omits the fourth claim, (p. 6.) The Reissued Patent appears to have been put in evidence in the Court below, (p. 15). This Court then would be without any drawings were these not supplied presumptively by the copy of the original Letters Patent put in evidence by the defendants.

Second. Our second proposition is, that the first two claims are absolutely void for want of invention. In

other words, that they do not in view of the state of the art present any patentable subject matter, but merely a matter of obvious mechanical construction, entirely open to the world at large.

It may be true that there was great economy in carrying oil in these larger tanks or packages instead of smaller ones, still the inquiry is, whether this advantage flows from an obvious mechanical difference or method of conducting the trade, or whether it flows from some invention as distinguished from obvious mechanical departure. It may possibly be as we have said, that the original combination constituting a complete tank car with all the enumerated ingredients of the combination was a patentable thing. It might be thought that here was something which taken all together, involved mechanical contrivance and ingenuity which approached at least to the line of invention, but to say when oil was being carried on railway cars as their schedule declares in barrels, casks, hogsheads, tierces, or other movable vessels or packages, and when, by the testimony of P. Metcalf, (p. 2 of Amended Record) permanent casks of from one to ten barrels each, were being sent forward on a large scale prior to 1863; returned empty, refilled and forwarded again, and fastened down by cleats, that there was any invention in simply putting two vessels of larger capacity on to a platform car to be carried and returned, seems to us quite impossible. So far as the placing the tanks one over each truck is concerned, it appears from the defendants evidence on pages 34, 36 and 38, that the universal practice for thirty years or more has been to load over the trucks as far as practicable, so that there was nothing novel in that. It might as well be claimed in regard to the transportation of any commodity that when a permanent large box or vessel was

substituted for several small packages, the substitution would be patentable as an invention.

Third. The defendants did not infringe. The stipulation as to infringement (page 13,) concedes, that defendants had used their tanks secured to the platform of a flat car or cattle car by means of cleats.

The stipulation provides that it shall not have the effect of excluding any other evidence on the same point.

The admission as to the kind of car is in the alternative and the testimony offered by the defendants of Andrews and Gregor shows that the defendants never used tanks on flat or platform cars but only on cattle or rack cars into which they were loaded. Hence if the Court hold as we have submitted that the term "ordinary railway car" in the reissue is limited by the drawing and other considerations to the species of car, to wit a flat car then defendants have not infringed.

Now can it be claimed that the loading of two tanks into a cattle car in the manner described by defendants witnesses, moveable at will, was in any sense constructing or using a tank car of any kind. Certainly they had a right to load large vessels into their cattle cars for the transportation and delivery of oil in bulk as well as to load smaller packages into them. We see from the record, by the oral testimony of defendants witnesses, and from the patents in evidence by the defendants to show the state of the art that the idea of carrying oil in bulk in vessels on the water and in tank cars of elaborate and ingenious contrivance was common and well known long before the subject, engaged the attention of these patentees.

Fourth. The first two claims of the reissue we submit necessarily embrace the appliances with which the com-

bination of the platform car and tanks is effected. These appliances defendants never used.

Fifth. It is submitted on the evidence of the complainants themselves, that the two Densmores, James and Amos, were not joint inventors. Amos Densmore had nothing to do with the invention except to suggest the idea of carrying petroleum in a railway car. James Densmore was the sole inventor page 21 X A 25.

Sixth. We finally submit respectfully that there were good grounds for the dismissal of this case by the Court below. That there was reason for the impatient way in which Judge Shipman treated the first two claims of the reissue in a trial at New York. p. p. 13 and 14 and for the suggestion of the Court in deciding the motion for a new trial in the Northern District of Ohio, in an action at law between the same parties, reported in Fisher, that it might be that here the testimony showed "that there were "no such elements of invention in the subject as are in- "dispensable—as would be requisite in the patent law." 4-128

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